

ERICSSON WIRELESS FIBER

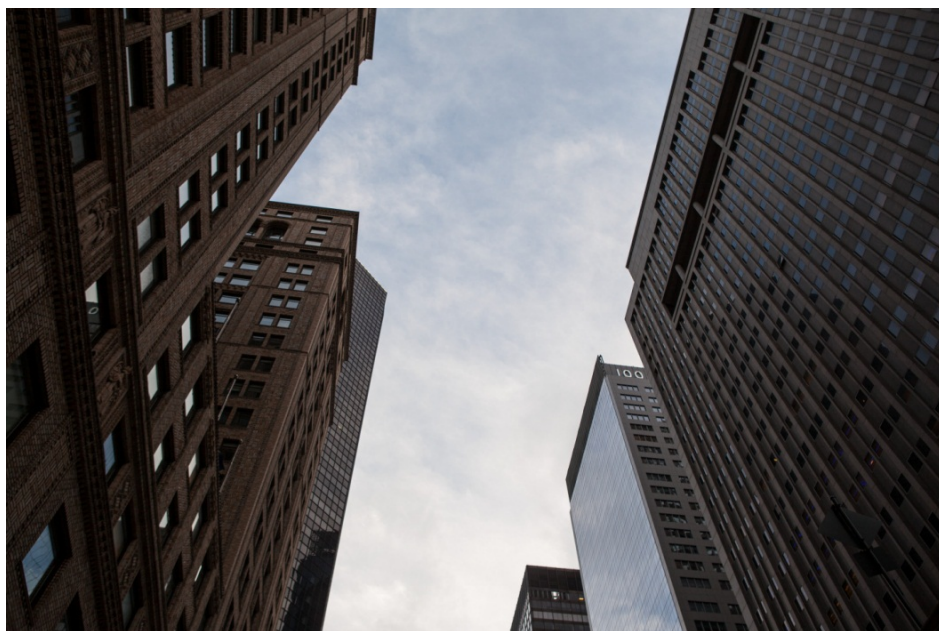
SIMPLE, SMART, SCALABLE, SUPERIOR

The Networked Society – where everything that can benefit from a connection will have one – is a reality being faced by enterprises of all sizes. Enterprise users are demanding and expect consistent, high-quality connectivity to do their jobs. Enterprises wrestle with how to serve those needs but manage costs and the security of their networks.

With 40 years of unparalleled experience and investment in microwave technology and R&D, Ericsson is an industry leader. After 3M microwave deployments with more than 800 customers in 175 countries, we've encountered nearly every scenario.

Every day, enterprises of all types and sizes, private industries, governments, utilities and service providers rely on Ericsson to ensure fast, secure transmission when speed, reliability and cost are factors.

Ericsson Wireless Fiber is the perfect solution to deliver high-performing networks that grow with your business but also allow reduction in operating costs over traditional wired networks.



State of the Art Solutions with Versatility Built-In

Our Wireless Fiber solutions are designed and continue to evolve with our customer's changing needs in mind, to ensure they offer:






- › High Reliability
 - ┌ Engineered for 6 9s reliability in diverse enterprise conditions with built-in enterprise security
- › Quick Time to Operation
 - ┌ The integrated antenna, superior system gain and small form factor enable rapid connectivity for your business, job site or command center in nearly any type of environment
- › Secure Networking
 - ┌ Built-in security protocols exceed requirements for most industries
- › LoS / NLoS Options
 - ┌ Solution for direct line of sight and encumbered sight paths
- › True Plug & Play
 - ┌ Easily connect to any router and install with minimal configuration
- › Low TCO & Green
 - ┌ Ericsson Wireless Fiber radios are more efficient, consuming 60% less power than traditional microwave technologies, reducing CO2 emissions
- › Easy Capacity Expansion
 - ┌ Pay as you grow – quickly adjust to increasing bandwidth needs with native Ethernet capabilities delivering up to 1Gbps per radio, expandable to 2Gbps per hop

Ericsson Wireless Fiber Solutions

When you're ready to build or grow, rely on Ericsson's Wireless Fiber for quick and easy capacity expansion. Our solution quickly adjusts to increased bandwidth needs with native Ethernet capabilities. Our radios have significantly higher output power than our competitors allowing us to achieve longer hops with smaller antennas. The ability to re-use the same antenna across products provides implementation flexibility and reduces costs. Having a modular design, our solution can grow along with your business – no over-engineering required.

Ericsson brings this all together with a flexible management system providing capabilities for network-wide management locally or remotely.

Ericsson Wireless Fiber in Vertical Markets

	<p>Enterprise</p> <ul style="list-style-type: none"> › Corporate campuses › New locations / expansions <ul style="list-style-type: none"> › Requires versatile solution with capacity scale › Need cost-effective solution with simple plug-and-play configuration and management tools › Business continuity and network redundancy
	<p>Municipalities</p> <ul style="list-style-type: none"> › City, County, State Offices <ul style="list-style-type: none"> › Extend LAN between buildings for voice and data › Last mile access to a service provider's point of presence
	<p>Schools</p> <ul style="list-style-type: none"> › Campus environment with escalating network traffic <ul style="list-style-type: none"> › Extend LAN between buildings with no need for fiber build › Add remote classrooms with video communication capability
	<p>Utilities</p> <ul style="list-style-type: none"> › Dispersed facilities (wind farms) <ul style="list-style-type: none"> › Connect substations to network operation center for real-time notifications and control › Upgrade legacy transmission network
	<p>Hospitals</p> <ul style="list-style-type: none"> › Hospital system with multiple buildings / campuses <ul style="list-style-type: none"> › Provide redundancy for mission critical links › Enable telemedicine and video conferencing between buildings and to off site clinics

MINI-LINK PT 2020 / 6020

An all-outdoor and zero-footprint microwave solution based on the next-generation packet platform



PT 2020
6-42 GHz
BAND



PT 6020
70-80 GHz
BAND

MINI-LINK CN 510

Indoor or outdoor high capacity, compact end-node for cost-efficient microwave hop deployments with split mount solution



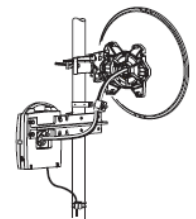
Simple connections at the bottom of the radio



ANTENNAS



(Integrated Installation)



(Separate Installation)

- › 0.2, 0.3, 0.6, 0.9, 1.2, 1.8, 2.4 & 3.0 m
- › 6 – 42 GHz & 80 GHz
- › Single & Dual Polarized
- › All antennas include a mounting kit
- › Supports Integrated and separate installation (except 80 GHz)
- › Separate installation kit has to be ordered

Technical Specifications

MINI-LINK PT 6020

All-outdoor solution for packet microwave transport

RADIO LINK

- › 1000 Mbps over 250 MHz channel using 64 QAM
- › TX power: +11 to +15 dBm
- › TRX Receiver threshold (10^{-6} BER): -71 to -58 dBm

ANTENNAS

- › 0.2/0.3/0.6 m (0.7/1/2 ft) single polarized antennas for integrated installation
- › 0.3/0.6 m (1/2 ft) dual polarized antennas for integrated installation

FREQUENCIES

71 – 76/81 – 86 GHz (duplex distance: 10 GHz)

TYPICAL WEIGHTS

5.7 kg/12.6 lbs

NOMINAL DIMENSIONS (H x W x D)

98 x 260 x 321 mm (3.9 x 10.2 x 12.6 inch)

POWER SUPPLY

-48V DC, Power over Ethernet

POWER CONSUMPTION

Typical value 45 W

INTERFACES

- › Traffic: Optical GE via 1000 BASE-X IEEE802.3
Electrical 10/100/1000 BASE-T IEEE802.3
- › Maintenance: 10/100 BASE-T IEEE802.3

STANDARDS AND RECOMMENDATIONS

ETSI, ECC, FCC, IC, IEC, IEEE, IETF, ITU

OPERATIONAL TEMPERATURE

-45° C to +60° C / -49F to +140F

DATA COMMUNICATION NETWORK

DCN over traffic interface via VLAN
IP based DCN for transport of O&M data

QUALITY OF SERVICE

- › 802.1p
- › DSCP
- › MPLS TC
- › 8 queues of configurable length
- › WRED or Tail-drop queue management
- › Strict priority and weighted fair queuing scheduling mechanism

NETWORK MANAGEMENT

- › Supported by IP transport NMS and ServiceON
- › SNMP v3
- › SSH
- › RADIUS
- › TACACS+
- › Syslog
- › RMON
- › Configuration via CLI
- › Built-in webpage

SYNCHRONIZATION

- › Synchronous Ethernet
- › Transparent for Frequency Synch over Packet

Technical Specifications

MINI-Link CN 510 2.1

Compact and cost effective hop solution for microwave transport

HOP COMPATIBLE WITH

MINI-LINK TN and MINI-LINK PT 2020

CAPACITY

Up to 840 Mbps over the hop in one frequency channel with XPIC and 2 IDU's

CONFIGURATION

1+0, 2+0 and 1+1 working and hot standby

FREQUENCIES AND MODULATIONS

- › 4-1024 QAM. 10 – 56 MHz
- › C-QPSK
- › Adaptive Modulation
- › XPIC
- › Enhanced Radio Link Bonding

INTERFACES

- › Ethernet 4 x 10/100/1000 BASE-T x 2 x 8FP
- › PDH and E1 over CES 16 x E1, 120 or 75 Ohm
- › O&M / Site LAN 100BASE-T
- › User I/O 4 input + 2 Output

POWER CONSUMPTION

28.3 W (1+0, with DC Pass)

ETHERNET SWITCHING

- › Q bridge – 7 Gpps non blocking switch capacity full duplex
- › Provider bridge
- › Egress Shaping
- › Circuit Emulation (CES) – HW prepared

SYNC

- › Support for sync. transport with 2 MHz acc G.703 § 13 and 2 Mbps G.703 § 9
- › Sync Ethernet
- › 1588v2 (phase and time) – HW prepared

ETHERNET FUNCTIONS

- › VLAN LAG (Link Aggregation Group), STP/RSTP/MSTP, 9k Jumbo frames
- › Ethernet PM counters
 - › Continuous
 - › During intervals (15min/24h)
- › Service OAM
- › Secure protocols (SSH, SFTP, SNMPv3)
- › RADIUS/TACACS+

POWER SUPPLY

-48V DC and with redundant power supply

WEIGHT

2.82 kg

DIMENSIONS (HxWxD)

240 x 440 x 45 mm

ANTENNAS

- › 0.2/0.3/0.6/0.9/1.2/1.8 m single polarized antennas for integrated and separate installation
- › 2.4/3.0/3.7 m single polarized antennas for separate installation
- › 0.3/0.6 m dual polarized antennas for integrated and separate installation
- › 1.2/1.8/2.4/3.0/3.7 m dual polarized antennas for separate installation

STANDARDS AND RECOMENDATIONS

ITU, IEC, IETF, FCC, ANSI, UL, CAN/CSA, SRSP and IEEE

OPERATIONAL TEMPERATURE

- › Outdoor, full functionality: -50° C to + 60° C
- › Indoor, full functionality: -5° C to + 45° C

DCN

- › OSPF routing
- › DCN traffic can be sent in band over dedicated VLAN or over a dedicated DCN channel
- › One dedicated DCN port
- › Any Ethernet traffic port can be used as DCN port in case of in- band DCN

QoS

Ethernet IP and MPLS priority aware QoS

- › 8 priority levels
- › Policing, SP, WFQ and WRED

Ericsson Wireless Fiber Superior System Gain

System Gain: Combination of Transmitted Output Power and Receiver Sensitivity

Power Amplifiers

Provide maximum output power with minimum signal degradation



Error Correction Code

Improve receiver performance in real deployment conditions

BENEFITS

- › Higher Output Power
- › Better Receiver Sensitivity
- › More capacity
- › Enables additional revenues
- › Smaller antennas
- › Enables site cost reduction

CAPITALIZING ON SYSTEM GAIN

- › Enabling smaller antennas
- › Reduced footprint, Less wind load
- › Reduced site rent
- › Simplified Site Solution
- › Free up space for more links

MULTI-LINK SUPERIOR SYSTEM GAIN



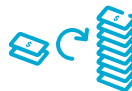
CAPACITY

Up to 30% higher capacity, enabling extra revenues



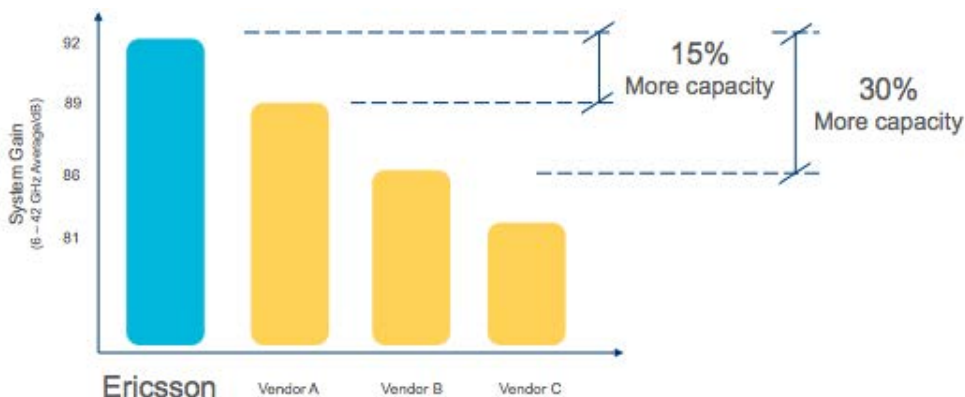
OPEX

Up to 30% cost reduction related to site rent



CAPEX

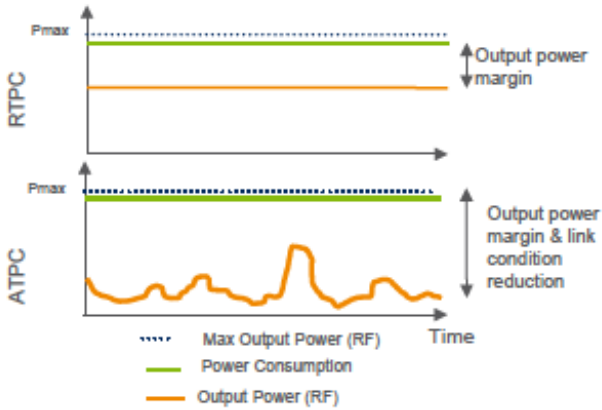
Up to 30% cost reduction related to site solution



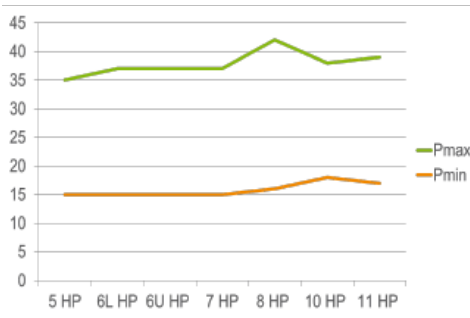
Superior System Gain = Extra capacity

Traditional Microwave

Consumes power independent of the output power used

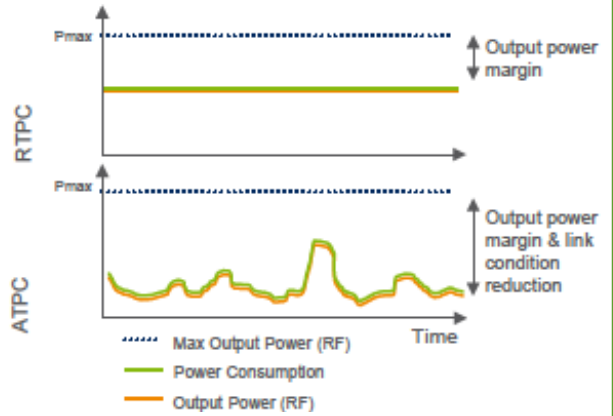


- › Reducing the output power from maximum to optimize link performance (Interference)
- › Power consumption is not affected

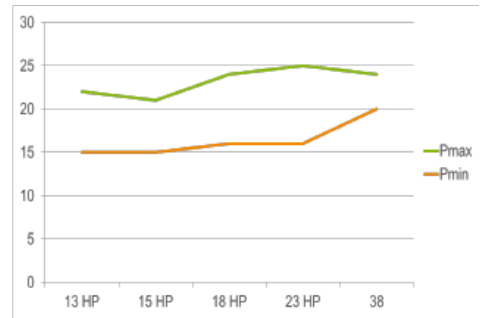


MINI-LINK Eco Mode

Consumes up to 60% less power



- › Reducing the output power from maximum to optimize link performance (Interference)
- › Power consumption is reduced



Why MINI-LINK Eco Mode

60% reduction in power consumption

Saves OPEX – up to 45 USD / terminal & year

For diesel powered sites – 3x savings



Outstanding Energy Efficiency Reducing OPEX

Reducing CO2 Emissions

Whether your transport needs are for indoor, outdoor or a combination, Ericsson Wireless Fiber offers a wide range of antennas and mounting options. Superior system gain translates into extra capacity on the same link and antenna, and the smaller footprint required results in minimizing site costs for real estate, tower reinforcement and having to reserve space for additional links for future expansion.

Work with Ericsson, the world's mobile technology leader, to connect your enterprise today