The industry’s highest performance 4G wireless backhaul solutions for carriers & enterprises
In every generation, there are those who dream... and create

19th century “string and tin can phone” (link distance up to 100 ft)

Alexander Graham Bell’s first telephone

The first long distance two-way phone call

ENIAC, the world’s first programmable computer

The first laptop

The first cell phone and smart phone

The Eiffel Tower, built for the 1889 World’s Fair, and later saved from demolition in 1909 due to the emerging field of radio telegraphy
At E-Band, the spirit of communications innovation lives on

E-Band Communications Corporation designs and manufactures the highest performance multi-gigabit capacity wireless backhaul systems based on 70-80 GHz millimeter-wave technology. Our customers include Carriers (mobile/cellular, Fixed Wireless/ISP) and Enterprises (Business, Government, Security, Education and Healthcare). Customers around the world, including top U.S. 4G carriers, use E-Band radios in applications such as 3G, 4G, WiMAX, LTE, mobile backhaul, LAN extension & security backhaul. In 1999 E-Band achieved the highest market share in the U.S. (approximately 58%), based on publicly available annual FCC license data.

2007  First commercially available 80 GHz wireless fiber-equivalent solution with advanced MMIC technology (E-Link 1000)

2009  Highest 80 Ghz market share in the USA, based on FCC licenses (E-Link 1000-EXR)

Today  World’s first 80 GHz radio with PoE, field selectable fiber & copper interfaces, & nearly a quarter watt of output power (E-Link 1000-LR)

Today  Industry’s first commercially available 80 GHz backhaul solution capable of 2.5 Gbps over the air (E-Link 2500)

Increase in E-Band’s worldwide sales in 2010

+24 dBm

Power Amplifier Chip

Our latest invention...
Field-swappable connector that enables installers to use copper, fiber or mixed interfaces. And for distributors, lowers inventory costs (fewer configurations to stock). Patent Pending.

Shukhov Radio Tower
Moscow, Russia
(built between 1920-1922)
E-Band Communications has a long-term exclusive field of use license agreement with Northrop Grumman Corporation for its Monolithic Microwave Integrated Circuit (MMIC) technology. The highly integrated multifunction GaAs MMIC-based chipset is used by E-Band to develop low cost, high performance millimeter wave radio communication systems. This technology gives E-Band and its customers an advantage over competitors and ensures long term performance and cost advantages.

One reason our radios are so reliable is that they are designed, assembled and tested in San Diego, CA USA. If manufacturing personnel have an issue, our top engineers are just minutes away – providing E-Band and our customers the advantage of real-time improvements that can take competitors months to implement.

6 chips, exclusive to E-Band Communications, were co-developed with Northrop Grumman and provide real-world performance advantages to our customers.
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Our flagship backhaul solution
The E-Link 1000-LR (Long Range) & 1000-ELR (Extended Long Range) solutions provide the highest 70/80 GHz performance available, thanks to our exclusive Microwave Monolithic Integrated Circuit (MMIC) technology. Available with either a 1 foot antenna (0.3m) or 2 foot antenna (0.6m), these solutions offer higher throughput, longer distances, superior reliability & faster ROI.

Features & performance
• Full duplex wire speed Gigabit Ethernet
• Rapid Field Replaceable unit with direct slip-fit antenna
• Highest available E-Band Link Budget (190dB)
• Field selectable/replaceable GigE interface (patent pending)
• Rapid Tributary Port Shutdown
• Typical link distances exceed 3 mi / 5 km for 99.99% availability
• Low Latency for multimedia applications (<5µs)
• Lightweight, small footprint, all outdoor design
• Supports multiple network architectures including
  - Point-to-Point, Mesh/Ring, Repeater
• Transparently handles multi-media jumbo packets
• Light licensing & interference free operation
• Transparent Support of all Ethernet clock sync techniques
  - SyncE, IEEE 1588v2, Adaptive Clock Recovery

Applications
4G/LTE/WiMAX backhaul
Fiber Extension
Remote Storage Access
Disaster Recovery
Redundant Access/Network Diversity
Mobile backhaul
Local Area Network Extension
Metropolitan Area Networks (MAN)
E-Link 1000-Q
4G Evolution™ Series

Spectrum efficient QPSK links
The E-Link 1000-Q, available with either a Long Range or Extended Long Range antenna, includes QPSK modulation for optimum spectrum efficiency. The 1000-Q offers the highest 70/80 GHz performance available, due to E-Band’s exclusive Microwave Monolithic Integrated Circuit (MMIC) technology. This industry leading technology provides higher throughput, longer distances, superior reliability & faster ROI.

Applications
4G/LTE/WiMAX backhaul
Fiber Extension
Remote Storage Access
Disaster Recovery
Redundant Access/Network Diversity
Mobile backhaul
Local Area Network Extension
Metropolitan Area Networks (MAN)

Features & performance
- Spectrum efficient QPSK modulation
- Full duplex wire speed Gigabit Ethernet
- Field changeable GigE interface (patent pending)
- Rapid Field Replaceable unit with direct slip-fit antenna
- Frequency agile
- Highest available E-Band Link Budget (190dB)
- Rapid Port Shutdown
- Typical link distances exceed 3 mi / 5 km for 99.99% availability
- Low Latency for multimedia applications (<5µs)
- Lightweight, small footprint, all outdoor design
- Transparently handles multi-media jumbo packets
- Transparent to Ethernet timing protocols (SyncE, IEEE 1588v2)
- Supports multiple network architectures including
  - Point-to-Point, Mesh/Ring, Repeater
Industry leading technology

The E-Link 2500 takes millimeter-wave performance to a new level. An advanced OMT coupler connects two E-Link 1000 Series radios to one antenna for up to 2.5 Gbps capability. Available with either a Long Range or Extended Long Range antenna, this solution can be deployed in 2+0 and 1+1 configurations. With flexibility and added performance, the 2500 is the perfect future-proof backhaul for networks with high subscriber/data usage growth.

Features & performance

- Innovative OMT Coupler connects two radios to one antenna, with each radio at a different polarization (horizontal and vertical)
- Increase the capacity of your existing E-Band network, while protecting your investment (backward compatible with E-Band 1000 Series radios)
- 2+0 and 1+1 capabilities
- 2 x full duplex wire speed Gigabit Ethernet
- Highly secure transmission (FIPS 140-2 gov. security capable)
- Low Latency for multimedia applications (<5µs)
- Simple all outdoor installation & maintenance using PC
- Supports multiple network architectures including
  - Point-to-Point, Mesh/Ring, Repeater
- Transparent Support of all Ethernet clock sync techniques
  - SyncE, IEEE 1588v2, Adaptive Clock recovery

Applications

- 4G/LTE/WiMAX backhaul
- Fiber Extension
- Remote Storage Access
- Disaster Recovery
- Redundant Access/Network Diversity
- Mobile backhaul
- Local Area Network Extension
- Metropolitan Area Networks (MAN)
**E-Link Mini**

Compact Street & Campus Level Wireless Bridge

- Affordable 60 GHz short range solution
- Extremely small & unobtrusive design
- Perfect for quickly connecting buildings
- Backed by E-Band’s renowned tech support
- No external power supply needed
- Less than half the size, weight and power consumption of competing solutions!

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**Advanced street-level solution**

E-Band’s 60 GHz E-Link Mini provides a highly secure point-to-point data link that is ideal for connecting buildings at street or campus level. Its design & performance makes it perfect for network extension, providing an aesthetically superior flat panel solution that is perfect for sensitive architectural settings. This extremely small radio (7.2 x 7.2 in / 182 x 182 mm) is easily installed with one cable (PoE). A fast-connect wall mount is included.

**Features & performance**

- Less than half the size, weight and power consumption of competing solutions, and doesn’t require external power supply
- Spectrum efficient QPSK modulation
- Link availability up to 99.999%
- Advanced ultra small, high gain flat panel technology
- Easy installation using visual alignment aid & flat/wall mount bracket (included)
- 320 Mbps Full duplex
- License-free operation in most countries
- PoE (just one cable handles power and data transmission)
- Management using built-in browser-based HTTP or SNMPv2
- QoS/flow control
- 10/100/1000BaseT
- Flexible options such as POE Injector, Surge Protector and Pipe Mount Bracket

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**Applications**

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E-Link Mini
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No external power supply needed
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Applications
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- Mobile backhaul
- Local Area Network Extension
- Metropolitan Area Networks (MAN)

E-Link MultiPort™
4G Evolution™ Series
- Universal Signal Processor for TDM & IP Traffic
- Eases transition to 4G networks
- Reduces installation costs, safety risks and down time associated with upgrading network

Seamless transition to 4G
E-Band’s MultiPort™ is an optional indoor unit designed to ease the transition to 4G networks by providing configurable TDM and IP capabilities. Since MultiPort is software defined, carriers configure it to the exact needs of their network, thus reducing installation costs, safety risks and down time associated with upgrading network capacity and transitioning from TDM to IP networks.

Features & performance
- Accepts different types of serial inputs and converts them into a single data stream
- Ethernet 4x10/100/1000
- E-Link Interface Modules make customization of MultiPort easy, without having to climb towers as with competing solutions:
  - GigE and 2xE1/T1
  - GigE and 23xE1/T1
  - GigE and up to 3xSTM-1/OC-3
- High throughput (up to 1000Mbps, TDM/IP traffic)
- IP switch support: VLAN, QoS, ToS
- Management: CLI, HTML, or SNMPv1
- Reduces CAPEX expenditures. Enables the operator to maintain TDM traffic while migrating to an all IP network
- Easy to install and reliable. Only one cable is needed between the MultiPort IDU and E-Link ODU

Applications
- 4G/LTE/WiMAX backhaul
- Fiber Extension
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E-Band has over 3,000 radios installed in over 30 countries.
Appendix: WCA Article

Wireless Communications Association

Avalon Ventures

Avalon Ventures is a venture capital fund focusing on companies in life sciences, wireless communications and Web 3.0 media. The collective market cap of Avalon’s portfolio companies exceeds $11 billion.

Hercules Technology Growth Capital (NASDAQ: HTGC)

Hercules Technology Growth Capital, Inc. (market cap US$304M) is a specialty finance company providing growth capital to technology and life science companies at all stages of development.

Sprint Nextel Corporation (NYSE: S)

Sprint Nextel Corporation (market cap US$11.4B) offers wireless and wireline communications products and services to consumers, businesses and government users in the U.S. and internationally.

Reliance ADA Group

Reliance is among India’s top 3 private sector businesses (market cap of US$ 81B). Reliance Communications is a telecommunications service provider and ranks among the Top 10 Telecom companies in the world.

ADC Telecommunications (NASDAQ: ADCT)

ADC Telecommunications, Inc. (market cap US$639M) provides broadband communications network infrastructure products and related services worldwide.

Investec (JNB: INL, LON: INVP)

Investec provides a diverse range of financial products and services to a client base in three principal markets, the United Kingdom, South Africa and Australia, as well as certain other geographies.

Express Ventures

Express Ventures is a venture capital company that assists leading US technology companies. The fund’s limited partners consist of 47 of San Diego’s elite technology entrepreneurs, business leaders and investors.

OpenAir Ventures

OpenAir Ventures is an early stage venture capital firm focused on making equity investments in innovative companies that are advancing the next generation mobile and wireless market.

E-Band Investors

Inside the Shukhov Radio Tower

Moscow, Russia

“E-Band...a poster child of an incredibly well performing company and we see very good long term cap appreciation potential from that investment.”

Manuel Henriquez - Chairman and CEO

Hercules Technology Growth Capital, Inc. (HTGC)

Installation Examples

Sears/Willis Tower (built in 1973)

Chicago, IL USA

Finland

Riyadh, Saudi Arabia

Hanoi, Vietnam

Moscow Region, Russia
E-Band Investors

Avalon Ventures www.avalon-ventures.com
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OpenAir Ventures www.openairventures.com
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E-Band Advantages:
- Industry-leading support
- Highest output power
- Highest availability
- Longest distances
- Exclusive MMIC technology
- Field replaceable interfaces
- POE
- Lowest power consumption
- Smallest & lightest radios
- Up to 2.5 Gbps over-the-air
- Proven in the world’s most advanced 4G networks, such as Clearwire™

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Call or email today, and find out why the world’s leading carriers choose E-Band