



## The NextNet® Technology Advantage

NextNet Wireless is the first company to commercialize [Non-Line-of-Sight](#) products for the [broadband](#) wireless market. Our industry-changing solutions address the most challenging carrier requirements for network performance, profitability, and [scalability](#). NextNet's Expedience® system combines the industry's most advanced technologies into a [state-of-the-art](#), yet elegant solution, that is easy to deploy, manage, [provision](#), and grow, to meet the needs of a changing customer base.

The patented Expedience system integrates the following technologies into an unequalled [platform](#), which is driving the industry today, with commercial deployments worldwide.

- **OFDM** - ([Orthogonal Frequency Division Multiplex](#)) The [physical layer](#) protocol of choice for true [non-line-of-sight](#) and [4th generation broadband](#) networks. NextNet's [OFDM](#) utilizes hundreds of individual [carriers](#) and a patented process of [mapping](#) a user's data to those carriers, to actually leverage the presence of [multi-path](#) to transmit and receive [robustly](#) in the [NLOS](#) service [environment](#).
- **TDD** - ([Time Division Duplex](#)) [Upstream](#) and [downstream links](#) on the same 6MHz ([MMDS](#)) [RF](#) channel provides the highest flexibility in frequency utilization. No need to use multiple [channels](#) or to have [guard bands](#) between [upstream](#) and [downstream channels](#).
- **AMOD** - ([Adaptive Modulation](#)) Enables higher capacity per [sector](#) and a [robust RF link](#) all the way to the edge of the wireless cell. [AMOD](#) can double the capacity per [sector](#) over a single modulation level.
- **DBD** - (Direct [Burst](#) Detection) NextNet patented equalization and detection scheme eliminates the need for equalizer training sequences before sending actual data. DBD minimizes latency of user [packets](#) and optimizes the efficiency of the NextNet [MAC](#) protocol.
- **Expedience MAC** - NextNet patented [MAC architecture](#) is the first protocol designed specifically for [last mile broadband](#) wireless [data networks](#) to optimize the scheduling and delivery of data and voice [packets](#) over a [multi-user NLOS airlink](#).
- **Ethernet Networking** – NextNet Expedience utilizes industry standard [Ethernet networking interfaces](#) for [base stations](#) and [CPEs](#) to provide an elegant solution for [scaling](#) and managing the broadband network at both the cell site, and the enterprise or home. No need to [configure](#) base station site controllers and clunky [point-to-point](#) connection protocols, Expedience is networked and managed like other standard [Ethernet](#) networks. Expedience [subscriber units](#) plug directly to [PC's](#) or [Ethernet](#) switches/routers for simple, [always-on](#), home or office [connectivity](#) that is compatible with existing equipment.

Technology companies are now attempting to develop systems around a specific technology [element](#) such as a complex antenna arrangement or a university research project involving coding algorithms. NextNet uses a "[systems approach](#)" to its development of the Expedience system, to combine the best technology [elements](#) into a system that truly meets the stated requirements of wireless [carriers](#).

Expedience is built around an [OFDM](#) and [TDD physical layer](#) to address the two biggest challenges to wireless [carriers](#), [NLOS](#) performance and frequency utilization. [OFDM](#) is superior to single carrier [QAM](#)

or [CDMA](#) at addressing [multi-path](#) and [frequency selective fading](#) in a [broadband](#) channel, making it the [physical layer](#) of choice for Expedience, as well as [standards](#) committees planning for [4th generation \(4G\) mobile broadband](#). (See Standards section below.)

[TDD](#) enables the Expedience system to be deployed on any channel in the [RF](#) band, making it extremely flexible to the carrier, who must manage its spectrum around other services or other [license](#) holders in the same market.

NextNet's combination of industry leading technologies makes the Expedience solution the best choice for a broadband [NLOS](#) service delivery [platform](#), over the [last mile](#) of the communications network. Our knowledge of system level design, and the capabilities of the Expedience platform enable [carriers](#) to confidently deploy broadband wireless networks today, knowing that their investment will be secure and profitable, as demands for capacity and services grow with time.

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## Standards: OFDM - The NLOS Standard of Choice

[OFDM](#) is proving itself to be highly effective at addressing the [NLOS](#) requirements of [second-generation BWA](#) systems. Because of this, NextNet and others have adopted it as a basis for broadband [access](#) platforms. A large number of industry [Standards](#) are being established that utilize [OFDM](#) as their [physical layer](#) protocol.

Included in the list of [OFDM](#) users is the [IEEE 802.11a](#) wireless [LAN](#) standard, which along with its brother [802.11b](#), has become a commodity for short-range wireless access to [local area networks](#). The [European Telecommunications Standard Institute \(ETSI\)](#), a widely recognized standards body has specified [OFDM](#) for their [BRAN HyperLAN2](#) standard. Also used in Europe for terrestrial video [broadcast](#) is the [DVB-T](#) standard, which is based on an [OFDM physical layer](#). And in Japan, [OFDM](#) is being used for the [HiSWANA](#), high-speed wireless [access](#).

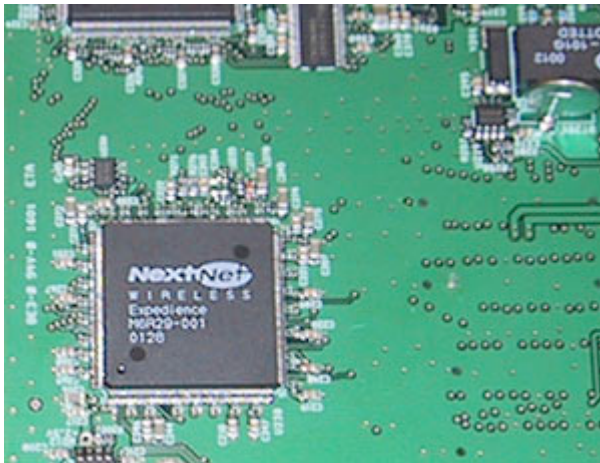
Looking forward, there are numerous "[Beyond 3G](#)" working bodies that are seriously considering the use of [OFDM](#) for [4th Generation mobile](#) broadband. Recognizing that [CDMA](#), while appropriate for many [narrowband](#) applications (such as voice), is not the best approach for high-speed data. [OFDM](#) is emerging as the next advancement in wireless telecommunications.

NextNet has already taken the first steps at unifying the technology of the future by the commercialization of the Expedience broadband wireless access platform. With thousands of satisfied [NLOS](#) subscribers proving the value of [OFDM](#) versus other previously used technologies, Expedience is the defacto standard for [second-generation BWA](#) systems. And, by working with [carriers](#), other vendors, and [standards](#) committees, NextNet is establishing [OFDM](#) as a worldwide broadband wireless industry standard.



## NextNet Wireless Develops First OFDM-Based ASIC Chip for Non-LOS Broadband Wireless Access

### Large Volume Production Capabilities Pave Way for Rapid MMDS Residential and SOHO Rollouts



Minneapolis, MN – August 22, 2001 — NextNet Wireless, developer of the industry's first [non-line-of-sight broadband wireless access](#) system, with indoor user-installable subscriber equipment, announced today that it has developed the industry's first [application specific integrated circuit \(ASIC\) chip](#), for integration into its Expedience™ broadband wireless access system. The Expedience system utilizes a patented air [interface](#) and [MAC architecture](#), designed specifically to address the non-line-of-sight broadband

wireless requirements of today's [MMDS](#) service providers. The [OFDM](#)-based ASIC enables NextNet to provide wireless operators with high volume, low-cost subscriber equipment for mass-market rollout of [next-generation](#) broadband wireless services.

“The introduction of this [chip](#) is a testament to the maturity of our Expedience [Non-Line-of-Sight](#) system,” stated Merv Grindahl, NextNet chief architect. “We believe that [standards](#) for broadband wireless should resolve the unique challenges of wireless communications. Rather than adapting existing wireline specifications, we developed our own signal processing techniques to address the [critical](#) issues of [Non-LOS](#), and integrated them onto a single, cost-effective [chip](#),” Grindahl added.

“The Expedience [ASIC](#) makes rapid deployment of inexpensive [subscriber units](#) a market reality, stated Charles Riggle, NextNet vice president of marketing and business development. “This product milestone, combined with our [configurable](#) drop-ship [base station](#) solution, creates a compelling business case for [MMDS](#) operators.”

“We are the only [broadband](#) wireless equipment supplier today with the capability to mass produce [Non-LOS](#) equipment solutions for the residential, [SOHO](#) and small business markets,” Riggle concluded.

Shipments of the Expedience [ASIC](#)-based [platform](#) are scheduled for the third quarter of 2001.

## About NextNet Wireless

NextNet Wireless is a privately held company that develops [non-line-of-sight broadband wireless access](#) platforms that provide telecommunications [carriers](#) with solutions for rapid deployment of high-speed, [two-way](#) voice and data services over the “[last mile](#)” of the communications network. The Company’s end-to-end Expedience™ system enables wireless service providers to deliver low-cost, [converged](#) services to small office/home office and residential subscribers over a single multi-service network. The Expedience platform is currently available for the [MMDS \(2.5 to 2.686 GHz\)](#) band, and its patented technology is being leveraged to address other frequency bands and wireless applications under 6 [GHz](#).

NextNet’s primary investors include [Cabletron Systems, Inc.](#) (NYSE: CS), [DCM-Doll Capital Management](#), [Globespan Capital Partners](#), [Star Ventures](#), [ZAMBA Corporation](#) (NASDAQ: ZMBA), and others.

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## NextNet Wireless Proves Non-Line-of-Sight MMDS System in Olympia, WA Field Test

### New OFDM-Based Platform Thrives in Dense Pine Tree Environment of the Pacific Northwest

Minneapolis, MN — March 14, 2001 — NextNet Wireless, developer of the industry's first [non line-of-sight](#) broadband wireless [access](#) system, with self-installable indoor [customer premise equipment \(CPE\)](#), announced today that it has successfully completed field trials of its Expedience™ system over [MMDS](#) frequencies owned by US Wirefree, in Olympia, WA. The [non line-of-sight](#) field trials confirmed that the Expedience system effectively delivers high-speed [fixed wireless](#) services over [MMDS](#) frequencies in densely populated, and highly obstructed areas, such as the Pacific Northwest.



[Propagation](#) and end-to-end performance tests were conducted using the Expedience [MMDS broadband access platform](#) and [off-the-shelf](#) network performance measurement software. The Expedience [base station](#), designed for multi-[cellular](#) market deployments, was installed on a local hospital building. Measurements were taken from over fifty locations within a five-mile radius, through a proliferation of pine and fir trees, hilly terrain, and dense fog and rain.

“We tried to find the toughest environment in the country to prove our [non line-of-sight](#) solution,” stated NextNet vice president of marketing Chuck Riggle. “The Pacific Northwest was chosen because it is a highly populated area, and not conducive to good [radio](#) signal [propagation](#), where hilly terrain, dense pine trees, and rain combine to absorb [RF](#) energy and create severe [multipath interference](#). Our unique combination of multi-carrier [OFDM](#), and advanced equalization techniques (both [upstream](#) and [downstream](#)), enable the Expedience platform to operate [robustly](#) in truly [non line-of-sight](#) indoor [CPE environments](#). We are extremely pleased with the outstanding performance that was consistently recorded from numerous points within the [coverage](#) area of our [base station](#),” Riggle concluded.

The [non line-of-sight](#) Expedience solution is designed for [MMDS](#) service providers, and their small office/home office and residential subscribers. The end-to-end system consists of a fully-[integrated](#), self-installable, indoor [CPE](#) ([modem-transceiver](#)-antenna unit), and a highly integrated base station. The compact base station design mounts

easily at the base of existing [cell](#) sites, towers or on buildings. The [non line-of-sight](#) system uniquely eliminates rooftop antennas and truck-roll installations to the home, making it extremely cost effective to deploy, even in those markets currently served by [cable](#), [DSL](#) or other wireless solutions.

NextNet will roll out its [MMDS](#) Expedience™ system in the first quarter of this year, shipping in limited quantities to beta partners, with full production targeted for the second quarter of 2001.

### **About NextNet Wireless**

NextNet Wireless is a privately held start-up company focused on building [MMDS non line-of-sight](#) broadband wireless [access](#) systems for rapid deployment of high-speed, [two-way](#) voice and data services over the “[last mile](#)” of the communications network. The Company’s end-to-end Expedience™ system enables [MMDS](#) service providers to deliver low-cost, [converged](#) services to small office/home office and residential subscribers over a single multi-service network. This technology will initially be applied to the [MMDS band](#) ([2.5 to 2.686 GHz](#)), and later leveraged to other frequency bands and applications.

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