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Motorola WiMAX System Connecting the Unconnected

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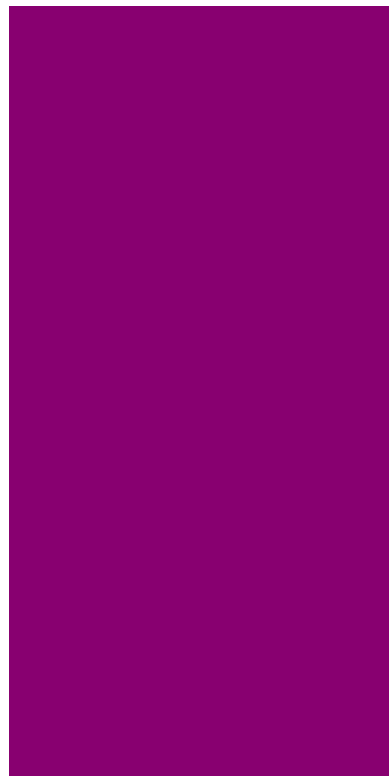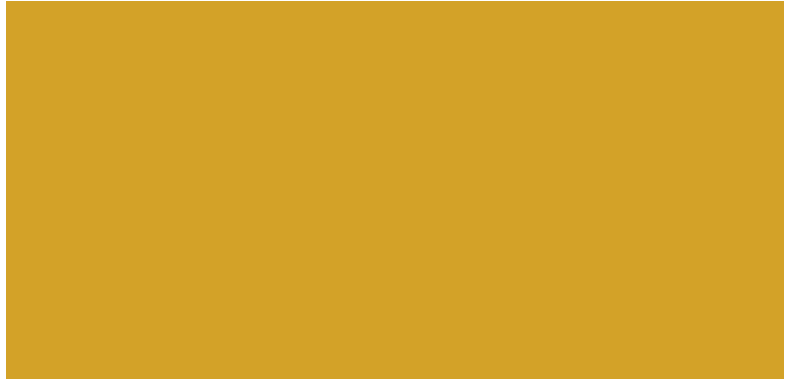
WiMAX System

Connecting the Unconnected

- End to End 802.16e Solution – Access, mobile and fixed devices, carrier class IP core and Services portfolio

- Innovative Access Point designs that lower cost of deployment

- Innovative all-IP network architecture helps to lower the cost of ownership

- Advanced RF technology that extends the area of coverage

- Selection of subscriber devices that offers flexibility and choice

- Optional mobility software that offers service extension

- Security and confidence from a wireless leader for over 75 years

Connecting the Unconnected

Much of the world's population will place their first telephone call over a broadband connection. Motorola's 802.16e based wireless broadband solutions lower the cost of deployment dramatically, compared to traditional wireless designs, making broadband services affordable in regions previously without any coverage at all. Combined with Motorola's innovative IMS-based core, IP telephony services over broadband coupled with broadband Internet connectivity will provide opportunities for economic development never before available to the world's billions.

Personal Broadband

Before 802.16e, the Internet was a mostly a static experience. A user was bound to a desk or at best, to a laptop at a WiFi hot spot in a coffee shop or a home. Motorola intends to change that, making the Internet more accessible, more mobile and more available through the introduction of Wireless Broadband for fixed, nomadic and mobile networks. Imagine a world where the Internet and all its information, services and connectivity are everywhere and all around you – that's the promise of Mobile WiMAX.

More Provider Choice

802.16e offers alternative last mile access for competitive broadband services, providing a homeowner or a small to medium size enterprise with more choice in service providers than ever before. Motorola expects 802.16e to enable new and innovative services, starting with simple Internet connectivity and best effort Voice over IP, expanding to carrier class IP telephony services based an IMS core (IP Multimedia Subsystem – the next generation all-IP switching center), and where permitted by regulations, to full mobility for voice and data.

WiMAX

What is WiMAX and 802.16e?

The IEEE 802.16 committee develops standards for wireless broadband. The WiMAX forum is an industry initiative establishing a set of product guidelines based on 802.16 standards (called "WiMAX profiles") that will lead to interoperable wireless broadband products. Motorola is a leader both in defining the new standards and in developing products to address this new market.

There are two broadband wireless technologies, both called WiMAX:

- Revision D is based on the IEEE 802.16-2004 standard. It is only for fixed applications.

- Revision E, based on IEEE 802.16e-2005, supports fixed and mobile applications and has a much more robust radio interface.

- The two versions of WiMAX are incompatible; subscriber devices deployed for Revision D will not work with Revision E networks. Due to this incompatibility and the better value proposition with Revision E, most of the wireless industry is bypassing Revision D for Revision E, including Motorola.

All Motorola WiMAX Solutions will be developed using 802.16e.

Cost of Ownership

WiMAX is an all-IP technology that offers service providers a number of distinct advantages:

- A highly efficient 802.16e air interface optimized for IP.

- Robust OFDM technology, better suited for mobility than 802.11g.

- Technology easily embeds in laptops, phones and consumer devices.

- Licensed spectrum for cellular-like wide area coverage.

- Built-in support for advanced antenna techniques like MIMO and beam steering.

- Standard, off-the shelf IP networking equipment instead of GGSNs.

- Equitable intellectual property rights minimize predatory, patent licensing practices and lower cost for consumers and industry.

- Built-in Quality of Service control enables operators to sell differentiated services and tailored applications.

- Multi-services network platforms enable operators to offer telephony, broadband, mobility and services to consumer and enterprise markets.

Motorola believes that WiMAX will be used by diverse service providers and private owners for many different applications. Motorola is developing a portfolio of end-to-end WiMAX networks and subscriber device solutions and services to offer the flexibility that our customers demand.

802.16e Products:

An end to end solution for all operators, virtually anywhere on earth.

Ultra Light Access Point 3500

Motorola Ultra Light Access Point is a "light infrastructure" connectivity solution for rural areas and developing countries, offering very low cost of deployment and ownership. The Ultra Light 3500 supports the international Fixed Wireless Access (FWA) bands at 3.5 GHz.

With a highly integrated, tower or pole mounted design, the Ultra Light Access Point:

- Offers a very low cost of deployment for point to multipoint fixed applications.
- Is based on the wi4 Canopy® product line, which has been creating service provider revenue from service since 2002, and is installed in more than 100 countries worldwide.
- Shares network management and other networking assets with Canopy, providing the unique option of using a hybrid licensed + unlicensed spectrum model to cover various regions with a single network solution.

Diversity and Smart Antenna Access Points 2500 and 3500

Many public service providers require the ruggedness and reliability of a carrier class network. Motorola's Diversity Access Point addresses this need for 2.5GHz and 3.5 GHz frequency bands. It offers high availability redundancy features, and very high system gain with MIMO technology for high capacity, high throughput and building penetration. The Smart Antenna Access Point combines the carrier class high availability redundancy with extended coverage range afforded by Motorola's smart antenna RF technology. Motorola expects to extend the Diversity and Smart Access Points to support other frequencies in the near future, starting with 2.3 GHz.

Motorola's Diversity and Smart Antenna Access Points allow carriers to:

- Provide fixed and mobile wireless broadband service over wide areas and in dense urban cores.
- Extend broadband service areas into new territories.
- Add mobility where permitted by regulation.
- Provide a universal or partial overlay of a 2G or 3G cellular network, offering rich multimedia services at a far lower operational cost than is possible though today's networks.

Carrier Access Point Controller

The Carrier Access Point Controller adds access security authentication and, optionally, mobility to a standard carrier IP network. CAPC represents an innovative architecture for all-IP mobile networks that flattens the Radio Access Network (RAN) and reduces capital and operational costs.

The CAPC architecture uses standard, off-the-shelf IP network equipment to eliminate many of the costly hierarchical network elements of 2G and 3G networks, such as BSC or RNC mobility network functions, as well as PDSN and SGSN/GGSN systems.

IMS Carrier Class IP Core

Motorola is a leader in the development of the next generation IP core for wireless broadband systems. MOTOwi4 combines the power of carrier class IP telephony service, interoperability with circuit switched public telephone networks and cellular networks, and a wide range of mobile data applications offered by the Motorola IP Multimedia Subsystems (IMS). So wireless broadband with MOTOwi4 unlocks a universe of profitable services for a WiMAX service provider.

The IMS was defined by the 3GPP standards body that considers GSM and UMTS networking and device standards, and adopted by the 3GPP2 body that does the same for CDMA networks. Motorola saw the value of marrying IMS and WiMAX at a very early stage, and now provides IMS as a key part of the end-to-end value of the MOTOwi4 solution.

Service providers using Motorola IMS for WiMAX services will be able to:

- Provide true IP telephony services with QoS, instead of simple best effort VoIP.
- Access all the applications being developed for the mobile carrier industry, with key but often overlooked functions such as billing, authentication and roaming.
- Enable and bill for multi-mode roaming on non-WiMAX systems such as cellular 2G and 3G networks, WiFi networks, and any other IP-enabled wireless access network.
- Increase ARPU for Wireless Broadband services.

Fixed and Nomadic Subscriber Devices

The 802.16e WiMAX portfolio includes:

- Outdoor Customer Premise Equipment (CPE) devices, mountable on rooftops, on poles or on the sides of buildings.
- Indoor "desktop" modems, with optional integrated ATA functions for IP telephony and VoIP systems, and WiFi gateways.

Mobile Subscriber Devices

Motorola is developing WiMAX devices for mobile telephony, Personal Broadband, and rich multimedia applications such as video, gaming, music and more. Devices and networks supporting a common set of WiMAX profiles, based on the 802.16 revision E standard, will interoperate, just as today's cellular telephones will work with access networks from any standards compliant manufacturer.

Motorola will offer a variety of devices:

- PCMCIA cards for laptop computer modems.
- Telephone style multimode devices (supporting both WiMAX and cellular).
- Smart phone systems with PDA form factors.

Network Services

Motorola offers an end-to-end suite of services to help service providers ensure, enable, enrich and enhance WiMAX networks for maximum efficiency and increased revenue. Our capability is unique in the wireless industry, with extensive experience in multi-vendor networks and multiple access technologies, as well as being a dominant global mobile handset supplier. This expertise enables Motorola to provide a suite of integrated services that allow service providers with WiMAX to offer seamless mobility experiences to their consumers.

Services to support MOTOwi4 are comprehensive, allowing service providers to focus on their customers while Motorola takes care of the network. To further enhance a service provider's seamless mobility experience for its customers, Motorola provides a robust suite of network efficiency solutions and revenue generating end-user applications with the opportunity to have such solutions fully managed. Keeping secured networks running at optimal efficiency requires the assistance of a vendor who understands the technical aspects of the network as well as the competitive business landscape.

WiMOTO?

Motorola is one of few major vendors with assets in all of the critical product and service line areas – and the necessary global span and market presence -- needed to deliver a practical, fully integrated WiMAX solution. Having long recognized the market need for high performing and cost-effective broadband wireless solutions, Motorola leverages over a decade of investment to deliver our best of class wi4 products.

In addition to our 75+ years of experience in wireless systems deployment and subscriber devices design and manufacture, Motorola also has proven experience in wireless broadband. The highly successful wi4 Canopy line of fixed wireless broadband systems is currently in service in more than 100 countries around the world, providing low cost broadband communications through innovative software defined radios, integrated solution, and advanced radio techniques.

Motorola is committed to providing a comprehensive and competitive portfolio of WiMAX solutions that enable service providers to realize new revenue and cost saving opportunities.

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Motorola, Inc.

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