

Alvarion WiMAX™ End User Devices

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Installed at locations that require broadband wireless access, Alvarion's end user devices provide operators with the ultimate flexibility to serve a diverse range of business and residential customers cost effectively. There are three primary types of end user devices: mobile, self-install indoor, and for longer ranges an outdoor end user device. These three types of end user devices are easy-to-install with self provisioning capabilities, supporting a rich set of features based on Alvarion's vast experience in development and deployment of WiMAX and broadband wireless networks worldwide.

Leading the market with its unique OPEN™ WiMAX architecture, Alvarion offers a complete ecosystem that encompasses network equipment, consumer electronics, service offerings, and even the end-users' experience. Alvarion's solutions answer to the strong market demand for field-proven Mobile WiMAX™ end user devices that support a wide range of frequencies and offer indoor/outdoor end user devices, self install capabilities, PC card, USB, and high quality triple play services.

OPEN WiMAX is the foundation of Alvarion's Mobile WiMAX 4Motion™ solution, which combines the BreezeMAX™ and best of breed systems from various partners to create an operator-centric network solution for WiMAX. Alvarion's proven product portfolio covers the full range of frequency bands with fixed, nomadic and mobile solutions. 4Motion enables the Personal Broadband experience – broadband for you, anytime, anywhere directly to your personal device. Compliant with IEEE 802.16e-2004 and 802.16e-2005 standard and employing a fully distributed, all-IP architecture, 4Motion is a flexible, low cost, end-to-end solution for operators.



Feature rich product portfolio – designed for fixed, nomadic and mobile users, BreezeMAX meets the requirements of the various application types, offering a rich terminal portfolio including: self install, outdoor installation, PC card and USB adaptor, in addition to a variety of networking and voice configurations.

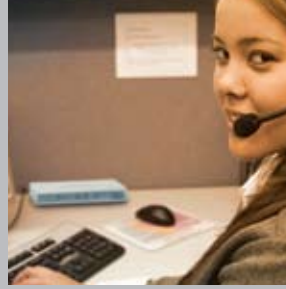
Open architecture – powered by today's leading chipset vendors such as Intel, Beceem, GCT and Sequans, and compliant with WiMAX Forum Network Working Group specifications, BreezeMAX ensures seamless interoperability with radio equipment, enabling deployment in open architecture networks.

Performance – ensuring a robust platform, BreezeMAX includes advanced algorithms such as Matrix A and Matrix B, MIMO, Beamforming* and HARQ, offering increased coverage and capacity.

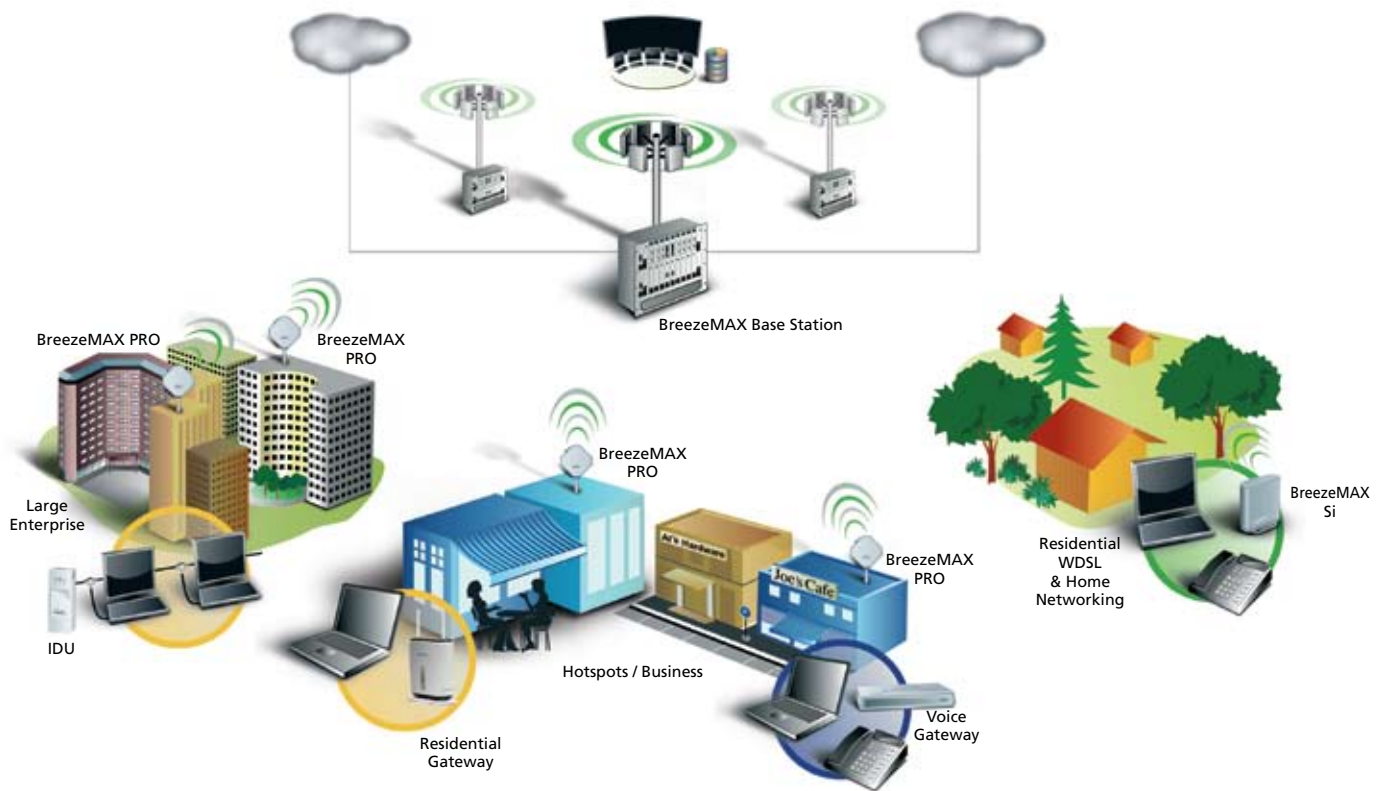
One stop shop – leveraging BreezeMAX, Alvarion's 4Motion solution includes radio infrastructure, terminals and core network elements that is designed to provide a complete 802.16e Mobile WiMAX end-to-end solution.

Multi-frequency – delivering fixed, nomadic and mobile services covering a wide range of frequencies, Alvarion's end user devices operate in the 2.x, 3.x and 5.x GHz spectrums.

* Future availability



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Unique Offering & Strategy

Mobile

BreezeMAX portable devices include PCMCIA and USB WiMAX adaptors, enabling laptop and desktop users to connect to WiMAX networks. They support Windows XP and Windows Vista operating systems. Small factor BreezeMAX portable devices are designed for mobile applications and include advanced handoff algorithms.



Indoor

BreezeMAX Si family – compact, nomadic and a single-box device, the BreezeMAX RGW Si is deployed indoors. It is designed for plug and play operation with easy-to-install and self provisioning capabilities. BreezeMAX RGW Si is suitable for home networking with services and interfaces, and includes four 10/100 Base-T for IP data, 802.11b/g for Wi-Fi access point, two VoIP (RJ11) ports for voice services, and optional battery back up. It supports switching antenna algorithm for increased coverage and capacity.



Outdoor

BreezeMAX Pro family – serving as an outdoor access unit, BreezeMAX PRO is comprised of an outdoor radio unit (ODU) and an indoor network interface unit (IDU). The ODU contains a modem, radio and integral or external high-gain flat antenna.

The BreezeMAX PRO is also available in multiple network configurations, and optimally serves a wide range of market segments and applications. It is especially suited for corporate and rural installations. Each version of IDU connects directly to the ODU via a category 5 Ethernet cable that carries the data traffic, power and control signals between the IDU and ODU.



Voice

Primary managed voice capabilities using QoS and voice prioritization mechanism

BreezeMAX Si-V – offers an integrated solution for data and voice services, with a docking station that carries a self install unit and voice gateway, including optional battery back up for up to four hours. It is easy-to-install and provides up to two VoIP (RJ11) ports and one 10/100 Base-T for IP data.



BreezeMAX IDU-DV – both the IDU-1D1V and 1D2V are wall mounted, compact and easy-to-install indoor units, providing a voice gateway with outdoor unit feeding functionality. Supporting broadband data with one/two POTS lines, BreezeMAX IDU is also equipped with battery backup for ensuring service continuity. Voice networking is achieved through either SIP or H.323 protocols supporting CLASS 5 services.



Voice gateway – the broadband voice gateway provides integrated voice and data services for residential and SOHO users and is available with one/two RJ-11 POTS ports. Featuring advanced voice and data functions such as VLAN tagging, traffic prioritization by IP Differentiated Services, H.323 and SIP protocols support, class voice services (3rd party conference, call waiting, call hold), integrated management and more, the broadband voice gateway presents an ideal single box solution for operators seeking to serve combined broadband voice and data services.

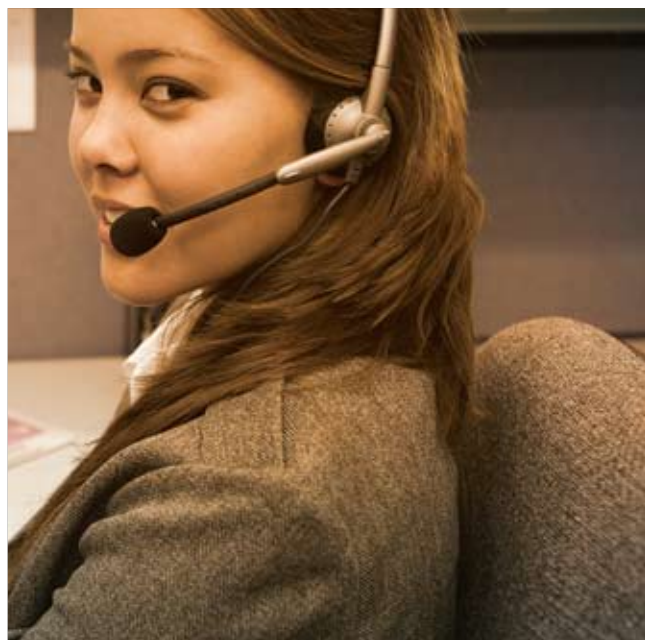
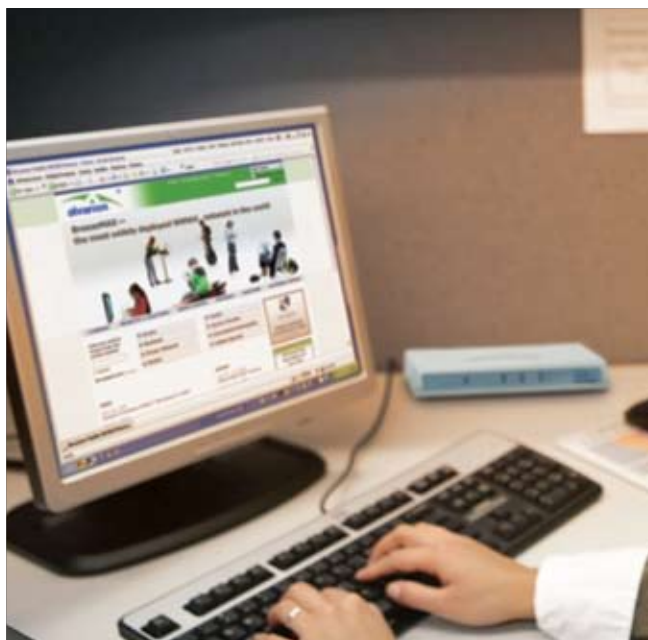


Portfolio Summary

Category	Model	Type	Interface	Frequency	Description
Mobile	BMAX PC Card	Modem	1 Data	2.3, 2.5, 3.5	BreezeMAX PC card is a WiMAX adaptor that fits any laptop with CardBus interface. It operates in Windows XP/Vista OS and provides one IP data interface.
	BMAX USB	Modem	1 Data	2.5	USB is a WiMAX adaptor that fits any laptop/desktop with USB 1.1/2.0 interface. It operates in Windows XP/ Vista OS and provides one IP data interface.
Indoor Self-install	BMAX Si 1100	Modem	1 Data	2.3, 2.3 WCS, 2.5, 3.3, 3.5	BreezeMAX Si indoor unit with one 10/100 Base-T data port + one/two RJ11 POTS ports.
	BMAX Si 2100	Modem	1 Data	2.3, 2.5, 3.5	
	BMAX Si 3100	Modem	1 Data	2.3, 2.5, 3.5, 5.x	
	BMAX Si 2120	IAD	1 Data, 2 Voice	2.3, 2.5, 3.5	
	BMAX Si 2421	RGW	4 Data, 2 Voice, Wi-Fi	2.3, 2.5, 3.5	BreezeMAX Si with integrated networking and voice gateways with four 10/100 Base-T data ports + two RJ11 POTS ports, Wi-Fi AP and battery backup.



Category	Model	Type	Interface	Frequency	Description
Outdoor	BMAX PRO 1100	Modem	1 Data	2.3, 2.3 WCS, 2.5, 3.3, 3.5	BreezeMAX outdoor subscriber radio unit with integrated vertical antenna or with external antenna with one 10/100 Base-T data port and one/two RJ11 POTS ports.
	BMAX PRO 2100	Modem	1 Data	2.3, 2.5, 3.5	
	BMAX PRO 3100	Modem	1 Data	2.3, 2.5, 3.5, 5.x	
	BMAX PRO 2120	IAD	1 Data, 2 Voice	2.3, 2.5, 3.5	
	BMAX PRO 2421	RGW	4 Data, 2 Voice, Wi-Fi	2.3, 2.5, 3.5	BreezeMAX outdoor subscriber radio unit with integrated vertical antenna or with external antenna, four 10/100 Base-T data ports, two RJ11 POTS ports and Wi-Fi access point.
Voice	VG -1V	Voice Gateway	1 Data, 1 Voice	N/A	BreezeMAX broadband voice gateway indoor module with one 10/100 Base-T data port + one/two RJ11 POTS ports; connects to BreezeMAX Si or to BreezeMAX PRO IDU.
	VG -2V	Voice Gateway	1 Data, 2 Voice	N/A	
	IDU-1D1V	Primary Voice	1 Data, 1 Voice	N/A	BreezeMAX wall mounted integrated data and voice gateway indoor module with one 10/100 Base-T data ports + one/two RJ11 POTS port; connects to BreezeMAX PRO.
	IDU-1D2V	Primary Voice	1 Data, 2 Voice	N/A	
	Si-V	Primary Voice	1 Data, 2 Voice	N/A	BreezeMAX Si integrated data and voice gateway indoor module with one 10/100 Base-T data port + one/two RJ11 POTS ports.



Highlights

WiMAX architecture – based on the WiMAX Forum® standard implementation of the IEEE 802.16e and ETSI HiperMAN industry specifications for wireless access in metropolitan area networks (MAN).

Multi-application – designed for all types of applications, delivering fixed, nomadic and mobile services.

Plug and play solution – easy and simple to use, self-installed end user devices use a friendly application, CD or a smartcard to enable automatic provisioning for homes, delivering instant broadband and making wireless technology a powerful consumer commodity.

Low cost of ownership – supports simple installation and offers demand-based pay-as-you-grow solutions, enabling operators to penetrate new market segments rapidly, while minimizing CAPEX.

High capacity and throughput – highly efficient and robust 802.16d and 802.16e air protocol, providing high broadband rates per subscriber of more than 10 Mbps net.

NLOS coverage – advanced orthogonal frequency division multiplexing (OFDM) enhances performance in non-line-of-sight (NLOS) conditions to ensure immunity to interference and multi-path conflicts, typical of deployments in densely populated urban areas.

Adaptive modulation technology – maximizes the bandwidth throughput of the system over large distances by automatically adjusting modulation to respond to various signal qualities.

Management system – a carrier-class network management system that simplifies network deployment and enables rapid expansion of service providers' customer base with effective fault management for quick resolution.



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Specifications

	1xxx series	2xxx series	PC Card	USB
Parameters	Value			
Chipset Vendor	Intel	Beceem	Beceem	GCT
Radio and Modem				
Frequency				
2.x GHz	2305-2360 MHz WCS: 2305 - 2315 MHz WCS: 2350 - 2360 MHz 2496 - 2690 MHz	2300-2400 MHz 2495-2695 MHz	2300-2400 MHz 2495-2695 MHz	2495 - 2695 MHz
3.x GHz	3300-3600 MHz 3650-3700 MHz	3400 - 3600 MHz	3400 - 3600 MHz	NA
Radio Access Method	TDMA TDD	TDMA TDD	TDMA TDD	TDMA TDD
Modulation	BPSK, QPSK, 16QAM, 64QAM	BPSK, QPSK, 16QAM, 64QAM	BPSK, QPSK, 16QAM, 64QAM	BPSK, QPSK, 16QAM, 64QAM
Channel Bandwidth	3.5, 5 MHz	5, 7, 10 MHz	5, 7, 10 MHz	5, 10 MHz
Antenna Gain				
Outdoor CPE	13 dBi at 2.3 GHz 14 dBi at 2.5 GHz 17 dBi at 3.5 GHz	11 dBi at 2.3 GHz 12 dBi at 2.5 GHz 15 dBi at 3.5 GHz	NA	NA
Indoor Si CPE	6 integrated antennas 7 dBi each for 2.3/2.5 GHz 9 dBi for 3.5 GHz	2x4 integrated antenna 5.5 dBi at 2.3 GHz, 6 dBi at 2.5 GHz, 8 dBi at 3.5 GHz	2 dBi	2 dBi
Sensitivity Typical Values				
	-77dBm for 64QAM at 5 MHz -97 dBm for BPSK at 5 MHz	-85dBm for 16QAM 3/4 at 10 MHz -95 dBm for QPSK 1/2 at 10 MHz	-81.5 dBm for 16QAM 3/4 at 10 MHz -92.5 dBm for QPSK 1/2 at 10 MHz	-81.5 dBm for 16QAM 3/4 at 10 MHz -92.5 dBm for QPSK 1/2 at 10 MHz
Data Communications				
Air interface	IEEE 802.16-2004 / IEEE 802.16-2005	IEEE 802.16-2005	IEEE 802.16-2005	IEEE 802.16-2005
Networking Gateway				
Interfaces				
Ethernet LAN	1 X 10/100 Base-T RJ45 connectors	4 X 10/100 Base-T RJ45 connectors	NA	NA
USB	USB 2.0	USB 2.0*	NA	USB 2.0
Ethernet WAN	10/100 Base-T RJ45 connector	10/100 Base-T RJ45 connector	NA	NA
General Features				
WAN connection types:	Yes	Yes (no static IP)	Yes (no static IP)	Yes (no static IP)
Static IP, DHCP, PPPoE and PPTP client				
Routing:	Yes	Yes	NA	NA
Static Route, Dynamic Route (RIP1/2)				
Firewall:	Yes	Yes	Yes	Yes
NAT firewall with SPI mode				
NAT functionality:	No	Yes	No	No
NAT, Virtual Server, Special Application DMZ Host				
VPN:	Yes	Yes*	No	No
IPSec, PPTP & L2TP Pass through				
DHCP:	Yes	Yes	NA	NA
DHCP Server for LAN and WAN clients				
DHCP client for WAN				
Wireless Features				
IEEE 802.11 b/g	Yes	Yes	NA	NA
Range Coverage:	Yes	Yes	NA	NA
Indoors - approximately 35-100m (114-328ft)				
Security: WEP encryption 64, 128 bit	Yes	Yes	NA	NA
Voice Gateway				
One or Two RJ11 connectors for analog telephones	Yes	Yes	NA	NA
Telephony and Fax Services				
VoIP protocol	H.323 or SIP	SIP	NA	NA
Internal Class 5 services:	Yes	Yes	NA	NA
Call waiting, 3-party call, call alteration, differentiated ringing tones				
External Class 5 services: Activation/deactivation of class-5 services supported by the IP-telephony system	Yes	Yes	NA	NA
G3 Fax: T.38	Yes	Yes	NA	NA
Calling number identification: FSK, DTMF	Yes	Yes	NA	NA
Speech codecs	G.711 (U-law and A-law), G.729ab	G.711 (U-law and A-law), G.729ab, AMR	NA	NA
DiffServ: Level 3 (IP) mechanism for handling QoS	Yes	No	NA	NA
Electrical				
Power source	100-240 VAC, 50-60Hz	100-240 VAC, 50-60Hz	Host PC	Host PC
Power consumption	Outdoor CPE: 25W Si: 12.5W	Outdoor CPE: 25W Si: 21W	NA	NA
Environmental				
Operating temperature:	Yes	Yes	Yes	Yes
Indoor: -5 to 45 C (23-113 F)				
Outdoor: -40 to 55 C (-40 to 131 F)				
Operating Humidity:	Yes	Yes	Yes	Yes
Indoor: 5% to 95% non condensing				
Outdoor: 5% to 95% non condensing weather protected				
Standard Compliance				
EMC: ETSI EN 301 489-1	Yes	Yes	Yes	Yes
Safety: EN 60950 (CE) CB, IEC 60950 US/C (TUV)	Yes	Yes	Yes	Yes
Environmental: ETS 300 019 (part 2-1 T 1.2 & part 2-2 T 2.3 for indoor & outdoor	Yes	Yes	Yes	Yes
Radio	FCC part 27, ETSI EN 301 021 V1.4.1 ETSI EN 301 753 V1.1.1	2.3-2.4: FCC part 15, EN 302 326-1 V1.1.1, EN 302 326-2 V 1.1.2, 2.495-2.69: FCC part 15,27, ETSI EN 302 326-1 V.1.1.1, EN 302 326 V1.1.2 3.4-3.6: ETSI EN 302 326-1 V.1.1.1, EN 302 326 V1.1.2	2.3-2.4: FCC part 15, EN 302 326-1 V1.1.1, EN 302 326-2 V 1.1.2, 2.495-2.69: FCC part 15,27, ETSI EN 302 326-1 V.1.1.1, EN 302 326 V1.1.2 3.4-3.6: ETSI EN 302 326-1 V.1.1.1, EN 302 326 V1.1.2	2.495-2.69: FCC part 15,27, ETSI EN 302 326-1 V.1.1.1, EN 302 326 V1.1.2

*Future availability