BreezeACCESS™ II

Affordable freedom

BreezeACCESS II is the ideal broadband wireless access system for service providers operating in the unlicensed 2.4 GHz ISM band. As a wireless alternative to wired access networks, BreezeACCESS II leverages Frequency Hopping Spread Spectrum technology in Time Division Duplex (TDD) mode to deliver reliable broadband data services, reaching remote locations and bypassing unusable copper. BreezeACCESS II provides an instant and independent infrastructure, which is immediately deployable with lower infrastructure construction and operating costs than any other solution on the market.

Product Highlights

BreezeACCESS II delivers a comprehensive range of product features, ensuring fast, consistent and reliable data and voice service, including

- Demand-based build-out, easy installation and low cost of ownership enables rapid market penetration, increased subscription and enhanced value-added services.

- Packet switching technology optimized for IP-based applications and "always on" connectivity.

- Frequency Hopping Spread Spectrum (FHSS) radio technology provides unlimited cell overlay capacity and seamless integration between cells, eliminating capacity planning or performance degradation when adding new subscribers. In addition, FHSS is not susceptible to interference from other technologies operating in the same 2.4GHz ISM band

- Adaptive Circuit Switched Emulation (ACSE) air protocol maintains the efficiency of IP transmission, while reserving specific time slots for active voice call traffic.

- Fast packet-based data transmission and toll quality for delay and jitter sensitive telephony.

- Highly cost effective infrastructure and customer premises equipment.

- Toll quality voice with integrated RJ11 voice ports in subscriber units.

- Advanced telephony features when used in conjunction with a V5.1 gateway.

- 802.1P enables delay sensitive traffic to be prioritized in the network.

- 802.1Q VLANs separate traffic into virtual private networks.

- Independent uplink/downlink transmission settings for CIR/MIR, enabling assured and differentiated QoS.

- Carrier grade features including a rack mount chassis base station with redundancy, hot swap capability and UPS facilities.

- Easy-to-use SNMP-based remote management system, enabling simple unit configuration and multiple simultaneous unit upgrading.

BreezeACCESS II System Components
BreezeACCESS II CPEs - Equipped to perform

The BreezeACCESS II series of Customer Premises Equipment (CPE) features both data plus voice and data-only capabilities. The BreezeACCESS II family of CPEs comprises two types of subscriber unit configuration options, which enable service providers to optimize their network architecture for greater subscriber reach and satisfaction.

Both indoor and indoor/outdoor configuration options connect to the subscriber's data equipment via a standard IEEE 802.3 Ethernet 10-BaseT (RJ 45) interface. Telephony services are supported using a standard POTS (RJ 11) interface connected directly to the subscriber's telephone.

Miniature Indoor Units

Optimized for indoor installations, the miniature indoor units are designed to fit conveniently on a desktop or mounted easily on the wall. BreezeACCESS provides SU-ID or SU-R units that feature two RF connectors for detached diversity antennas.

Product Type	Product Name	Product Description
Miniature Indoor Subscriber Units	SU-ID-1D-2.4	Detached antenna - 1 data user
	SU-ID-BD-2.4	Detached antenna - full bridge
	SU-R-1D-2.4	Detached antenna - 1 data user
	SU-R-BD-2.4	Detached antenna - full bridge
Subscriber Units with an Outdoor Radio Unit	SU-A-1D-2.4	Integrated antenna - 1 data user
	SU-E-1D-2.4	Detached antenna - 1 data user
	SU-A-BD-2.4	Integral antenna - full bridge
	SU-E-BD-2.4	Detached antenna - full bridge

Subscriber units are available with single telephone line support

Indoor/Outdoor Units

The BreezeACCESS II indoor/outdoor option includes an indoor desktop or wall-mountable unit and an outdoor antenna and radio unit.

Data, power, management and control signals are transmitted from the indoor unit to the outdoor unit via a coaxial cable. The outdoor units feature two antenna options, delivering enhanced network flexibility, as follows:

• **SU-A units:** Comprise a radio module and integrated flat panel antenna.

• **SU-E units:** Include a radio module and RF connector for a separate external antenna.

Both types of outdoor units are available with either 26dBm (HP-High Power) or 2dBm (LP-Low Power) output power at the antenna port.

BreezeACCESS II Base Station Equipment - Core technology, elemental strength

BreezeACCESS II provides a Base Station and three types of Access Units, delivering superior flexibility in architecture and network deployment.

All Access Units are connected to the subscriber's data equipment via a standard IEEE 802.3 Ethernet 10BaseT (RJ 45) interface.

Base Station Shelf

The 19" Base Station shelf (BS-SH) can hold up to six BS-AU modules, providing reliable access to maximum numbers of subscribers.

The BS-AU modules can be synchronized to ensure optimal utilization of the available frequency spectrum.

In addition, the Base Station shelf includes up to two redundant power supply modules, which are served by either a -48 VDC or a 110/220 VAC power source.

A GPS synchronization system allows accurate synchronization of BreezeACCESS base stations located on different sites.

Indoor/Outdoor Access Units

The BreezeACCESS II indoor/outdoor Access Unit configuration includes an indoor module and outdoor unit that contains the radio and antenna units. Data, power, management and control signals are transmitted from the indoor unit to the outdoor unit via a coaxial cable.

The indoor/outdoor Access Units are available with either 26dBm (HP-High Power) or 2dBm (LP-Low Power) output power at the antenna port.

The outdoor units feature two antenna options, as follows:
• **AU-A-BS units:** Comprise an indoor module and outdoor unit, which contains a radio unit and integrated panel antenna.
• **AU-E-BS units:** Feature an indoor module and outdoor unit, which contains a radio unit and an RF connector for a separate external antenna.

Miniature Indoor Access Units

Optimized for indoor installations, the miniature indoor units are designed to fit on a desktop or mounted on the wall and are powered from the mains (100-250 VAC).

The indoor Access Units (AU-ID) include two RF connectors for detached diversity antennas.

Stand-Alone "Micro Cell" Access Units

The Micro Cell Access Units are stand-alone modules that connect to the same outdoor units as described in the Indoor/Outdoor Access Units configuration. The indoor units are designed to fit on a desktop or mount on the wall and are powered from the mains. Data, power, management and control signals are transmitted from the indoor unit to the outdoor unit via a coaxial cable.
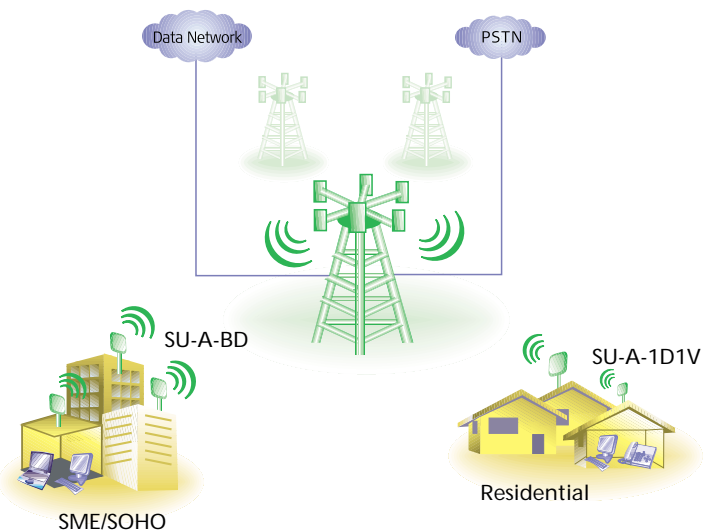
The outdoor units feature two antenna options, as follows:
• **AU-A-NI units:** Comprise an indoor module and outdoor unit, which contains a radio unit and integrated antenna.
• **AU-E-NI units:** Feature an indoor module and outdoor unit, which contains a radio unit and an RF connector for a separate external antenna.

BreezeACCESS II
Unrestricted access, unlimited choice.

Product Type	Product Name	Product Description
Base Station Shelf	BS-SH	Base station chassis with one DC power supply
	BS-SH-AC	Base station chassis with one AC power supply
Outdoor Access Units for use with Base Station	AU-A-BS-2.4	Includes base station module and outdoor unit with integrated antenna
	AU-E-BS-2.4	Includes base station module and outdoor unit with connectors for external antenna
Stand-alone Access Point	AU-E-NI-2.4	Includes indoor unit and outdoor unit with connectors for external antenna
Power Supply	BS-PS	Base station DC power supply
	BS-PS-AC	Base station AC power supply
GPS Synchronization System	GU-A-BS	Includes synchronization card and outdoor GPS radio unit with integrated antenna

Data Network

PSTN

SU-A-BD

SU-A-1D1V

Residential

SME/SOHO

Specifications

Radio

Frequency	2.4GHz ISM band
Radio Access Method	FHSS CSMA/CA
Operation Mode	Time Division Duplex
Standards	ETSI ETS 300 328, FCC Part 15
Channel Bandwidth	1MHz
Output Power (at antenna port)	SU-ID, AU-ID: 17dBm, 10dBm (ETSI)
	SU-R: 26dBm (FCC)
	SU-A/E, AU-A/E: 26dBm (HP) or 2dBm (LP), Control Range 20dB typical.
Antenna	SU-A: 15dB, 20˚
	AU-A: 16.5dBi, 60˚

Sensitivity (dBm at antenna port, BER 1E-6)	Data Rate	SU-ID, AU-ID	SU-R	SU-A/E, AU-A/E
	1 Mbps	-81	-86	-87
	2 Mbps	-74	-80	-81
	3 Mbps	-66	-71	-73

Data Rate	3 Mbps max.
Modulation	Multilevel GFSK

Outdoor Unit to Indoor Unit Communication

Intermediate Frequency (IF)	440MHz
IF Cable Impedance	50 ohm
Maximum IF cable Attenuation	15dB
Maximum IF cable DC Resistance	1.5 ohm

Voice Communication (DV series)

Protocol	H.323 Voice over IP compliant
Compression	G.723 6.3Kbps compression, G.729 8Kbps compression, G.711 64Kbps transparent
Echo Cancellation	G.168, G.131

Configuration and Management

Local Management	Via MON port, Monitor program using terminal emulation
Remote Management	SNMP, Telnet, TFTP
Remote Management Access	From the wired LAN or from the wireless link
SNMP agents	MIB II, Bridge MIB, BreezeACCESS Private MIBs
Accounting	Radius compatible client in subscriber units
Security	Authentication, Filtering and Virtual LAN
Software upgrade	TFTP download

Interfaces

RF (antenna)	AU-ID, SU-ID: 2 x SMA jacks
	AU-RE, SU-RE: N-Type jack, lightning protected
IF	AU-RA/RE, SU-RA/RE outdoor units: TNC jack, lightning protected
	SU-NI, AU-NI, BS-AU indoor units: TNC jack, lightning protected
Ethernet	Indoor units: 10BaseT,(RJ 45) with 2 embedded LEDs
Telephone (DV series)	RJ 11 (POTS)
Monitor	Indoor units: 3-pin low profile
Power	AU-RA/RE, SU-RA/RE outdoor units: 12VDC via the IF cable
	SU-NI, AU-NI indoor units, SU-ID, AU-ID: DC power plug to the external power supply
	BS-PS (Power Supply module of BS-SH): 4-pin DC power plug to a –48VDC power source
	BS-PS-AC (Power Supply module of BS-SH-AC): 3-pin AC power plug to a 110/220VAC power source

Electrical

SU-ID-xD (data only), AU-ID	5VDC / 1.5A from the external power supply (supplied with the unit), 100-250 VAC, 47-63 Hz
SU-A/E, AU-A/E-NI,	12VDC / 2.5A from the external power supply (supplied with the unit), 100-240 VAC, 47-63 Hz
BS-SH (modular base station shelf)	-48VDC or 110/220 VAC, 200W for a fully equipped shelf. 25W each AU (outdoor unit plus indoor module)

Mechanical

SU-ID, AU-ID	13cm x 8.6cm x 3cm, 0.5 kg.
SU-RA	30cm x 30 cm x 7.2 cm, 3 kg.
AU-RE, SU-RE	30cm x 12 cm x 5 cm, 2.2 kg.
SU-NI, AU-NI	13cm x 8.6cm x 3cm, 0.5kg.
BS-SH	19″, 3U, depth 26cm, 6 kg. fully loaded

Environmental

Operating Temperature	Indoor units and modules: 0˚C to 40˚C
	Outdoor units: -40˚C to 60˚C
Operating Humidity	5% to 95% non-condensing. Outdoor units are weather protected.

Standards Compliance, General

EMC	EN 300-385, FCC Part 15
Safety	EN 60950, UL 1950
Environmental	ETS 300 019

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