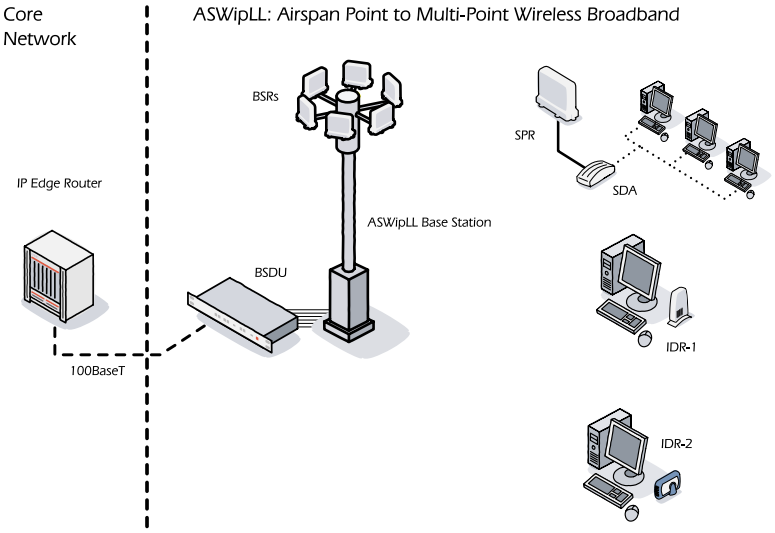
ASWipLL Broadband Wireless IP System

Airspan's ASWipLL platform is a low-cost high-performance Broadband Wireless Access system designed to deliver high-speed data, Voice over IP (VoIP) and multimedia services to residential, small business and enterprise customers. ASWipLL is capable of delivering burst data speeds of up to 4 Mbps (3.2Mbps net) to each customer. ASWipLL introduces real-time adaptive modulation (2-, 4-, 8-level FSK) and auto retransmission request (ARQ); features that offer high quality services whilst maximising spectrum utilisation. ASWipLL is available in both licensed bands (700 MHz, 1.5GHz, 2.3GHz, 2.5GHz, 2.7-2.9GHz and 3.3-3.8GHz) and unlicensed bands (900MHz, 2.4GHz and 5.8GHz).

Product Information



Overview

ASWipLL systems are designed to offer broadband access to a wide range of customers.

The heart of each system is the Base Station (BS), which provides radio access for the Subscriber Terminals (ST) deployed at the end users' location. The BS connects to the IP cloud using industry standard 100BaseT Ethernet interfaces.

ASWipLL supports two main types of STs; a split version comprising of a compact outdoor unit and an indoor unit and an all-in-one indoor unit. ASWipLL supports a range of indoor units for data and VoIP applications.

ASWipLL, working together with an Integrated Access Device (IAD) located at the customer premises and a Media Gateway (MG) connected to a Class 5 switch, provides a high-quality VoIP solution. Working with a number of third party IAD and MG vendors, ASWipLL solutions support H.323, MGCP and SIP protocols, as well as a range of voice coding standards.

ASWipLL comes with a network management platform (WipManage) which is used to remotely manage all aspects of the system. It runs on a scalable Windows NT or 2000 platform, uses the industry standard SNMP protocol and provides the crafts person with a user friendly graphical interface.

The design of ASWipLL incorporates numerous features that make it very cost effective to procure, deploy and operate. Features such as 'craftless-install' indoor subscriber terminals that automatically seek and connect to the best BS radio, highly modular and compact units, in-built routing functions and hand-held computer based installation tools all combine to make ASWipLL the fast route to profitability.

Key Features
(Benefits)

- Minimises initial investment, maximises return
- Packet based air interface
- Modular architecture
- 4Mbps (3.2 Mbps net) per BS Radio, up to 24 radios per Base Station
- Excellent immunity to external interferences
- Compact, integrated design
- Advanced Quality of Service (QoS) features
- Simultaneous support of Router, Transparent Bridge and PPPoE Bridge
- Sophisticated bandwidth management, CIR, MIR features
- Supports 802.1Q/p and VPNs
- 'Craftless-install' indoor Subscriber Terminals
- Auto seek and connect feature for faster deployment of subscriber terminals

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Applications

ASWipLL is ideally suited to ILECs, CLECs, ISPs and Enterprises wishing to roll out high-speed, high-quality IP based services to high-end residential, SOHO and business users. Here are some of the applications of ASWipLL:-

- **High-speed data**

ASWipLL customers can enjoy the benefits of high-speed, 'always-on' data access thanks to having burst rates of up to 4 Mbit/s - 80 times faster than the fastest dial-up PSTN modem. ASWipLL uses available sector bandwidth intelligently: Bandwidth is assigned only when there is a data packet to transmit. With ASWipLL, it is possible to take advantage of statistical gain over the air interface and oversubscribe the available bandwidth without degrading the delivered performance.

- **High-speed Internet access**

One of the advantages of ASWipLL is that users are 'always on': there is no need to dial-up the service provider first, making it easier and more fun to access the Internet. Users need only open their web browser or e-mail program to be instantly connected. ASWipLL can also distinguish between applications and users, enabling the operator to provide different classes of service to users.

- **VoIP**

ASWipLL provides a solution for voice as well as data. Standard telephone instruments are connected to a Integrated Access Device (IAD) which in turn communicates over ASWipLL with a Media Gateway (MG) connected to a Class 5 switch. Thanks to its open architecture, ASWipLL is able to interwork with a number of third party IAD and MG products on the market today, supporting a range of protocols (H.323, MGCP and SIP), as well as a range of voice coding standards (G.711, G.723, G.729).

- **Multimedia over IP**

The fact that ASWipLL can provide up to 4 Mbit/s of throughput to the user, together with its ability to set different priorities to different applications and provide QoS, make it a good solution for enabling services such as video-over-IP and good quality videoconferencing. The system can prioritize video packets in such a way that delays and jitter are minimized and the video packets pass smoothly through the system.

- **Private networks**

ASWipLL can be used in enterprise networks and campus networks. In this application, ASWipLL is used to construct a private network, which allows high-speed data, voice and multimedia services amongst its users, as well as being connected to the public network over an industry-standard interface such as 10/100BaseT Ethernet.

Thanks to its advanced software features ASWipLL can be used in creating secure, virtual private networks (VPNs) between the different locations of an enterprise.

- **Different Network topologies**

ASWipLL has been deployed in many ingenious ways around the world. In addition to the well-known PMP cellular deployment, ASWipLL BS radios have been deployed at street level, along electricity poles linked together by optical fibre, ASWipLL radios have been used for backhauling their own traffic and indoor coverage has been achieved by placing BS radios on adjacent buildings.

ASWipLL Management System

ASWipLL is managed by WipManage, the ASWipLL element manager, which runs on a standard Microsoft Windows platforms (Windows NT or 2000) and incorporates a user-friendly graphical user interface (GUI). WipManage is based on the industry standard Simple Network Management Protocol (SNMP) and provides a comprehensive range of management functions. It enables trap management, configuration control, fault isolation, performance monitoring and remote software download. WipManage can access each BS and ST unit in the system and manage it remotely using standard SNMP protocols plus private and standard MIBs for setting and retrieving parameters from the units. The top hierarchy of WipManage is a BS site view from which one can zoom into every ST.

ASWipLL Technical Specification

	Unlicensed Bands	Licensed Bands
Radio Technology		
Frequency Bands:	WipLL 900: 902-928 MHz WipLL 925: 910-940 MHz WipLL 2.4: 2,400-2,500 MHz WipLL 5.8: 5,725-5,875 MHz	WipLL 700: 698-746 MHz WipLL 1.5: 1,427-1,525 MHz WipLL 2.3: 2,300-2,400 MHz WipLL MDS: 2,500-2,686 MHz WipLL 2.8: 2,700-2,900 MHz WipLL 3.X: 3,300-3,800 MHz
Duplex Mode:	TDD	WipLL 3.X: FDD/TDD, WipLL 1.5: FDD Others: TDD
Radio Technology:	FH-CDMA	FH-CDMA
Synchronisation:	GPS synchronisation among the BSRs in a base station and across base stations is supported where allowed by regulation	
Multiple Access Method:	PPMA	PPMA
Output Power:	27 dBm* (30dBm WipLL 900)* *where allowed by regulation	27 dBm* (32dBm WipLL 700)* *where allowed by regulation
Antenna Type:		
Base Station:	Wide range of external and integral antennae (8dBi-18dBi)	
ST:	Wide range of external and integral antennae (8dBi-18dBi)	
Sub-Channel Spacing:	1 MHz	1 MHz
Modulation:	Multilevel (2, 4 or 8) CPFSK	Multilevel (2, 4 or 8) CPFSK
Receiver Sensitivity: (typical) **(BER 1E-6 @ 2/4/8 FSK)**	-90/ -83/ -75 dBm (-92/ - 85/ -78 dBm for WipLL 900)	-90/ -83/ -75 dBm
Throughput:	Up to 4 Mbps per BS radio or ST Up to 96 Mbps per BS site (Based on Spectrum availability)	Up to 4 Mbps per BS radio or ST Up to 96 Mbps per BS site (Based on Spectrum availability)
Link Range:	Exceeds 30km depending on frequency band, antenna gain and local regulations	
ST's per BS Radio:	126	126
Radio Standards Compliance:	ETSI EN 300 328-1 FCC part 15, RSS139, Telec	ETSI EN 301 253
EMC:	ETS 300 826	EN 300 385, EN 300 386-2, ETS 300 132-2 FCC part 21, FCC part 27

Networking

Protocols:	IP Routing, Transparent Bridging, PPPoE Bridging, 802.1Q/p, DHCP relay
QoS:	Based on 802.1p, DiffServe/TOS, IP addresses, protocols or applications
Security:	Authentication, Encryption, VPNs and IP filters based on IP addresses, protocols or applications
Service Classes:	Asymmetric CIR, MIR, Aggregated CIR/MIR, Fairness
RFC's:	768, 783, 791, 792, 826, 894, 903, 950, 1009, 1027, 1042, 1157, 1213, 1284, 1350, 1878

Management

Management Tools:	WIPManage - GUI based Element Manager, Data Base (ODBC)
Remote Management:	SNMP, Standard and Private MIBs
Local Management:	RS-232 (including Personal Digital Assistant - PDA) or SNMP
Software Upgrade:	Local or remote via TFTP, online, WipAD - Automatic Download
Auto Connect:	Auto seek and connect to base station with no CPE software configuration required
Spectrum Analyser:	PC based utility for spectrum analysis

ASWipLL Technical Specification (continued)

Mechanical and Electrical Specifications

BS	Outdoor Unit (BSR)	Indoor Unit (BSDU*)	Power Supply Unit (Optional)
Interfaces:	DB15, 10 Base-T RF: N-Type (optional)	6 x DB15, 10 Base-T 2 x RJ-45, 100 Base-T DB9, RS-232 Serial port	DB9, RS-232 Serial port
Power Requirements:			
Power consumption:	12W Max	80W Max (incl. BSRs)	25W Max. (incl. BSR)
Voltage:	30-55 VDC	30-55 VDC	90-264 VAC, 50/60 Hz
Dimensions H/W/D (mm):	317 x 400 x 65.5	43.2 x 482.6 x 228.6 (19" 1U)	388.8 x 482.6 x 360 (19" 9U)
Weight:	4.7 Kg	2.9 Kg	13 Kg (main rack + 3 rectifiers)

**** In some cases an SDA may be used instead of a BSDU***

ST Type I (SPR + SDA)	Outdoor Unit (SPR)	Indoor Unit (SDA)
Interfaces:	DB15, 10 Base-T N type Female (optional)	DB15, 10 Base-T 1 RJ-45 10 Base-T (SDA-1), 4 RJ-45 10 Base-T (SDA-4H) 4 RJ-45 10/100 Base-T (SDA-4S), VLANs, Port Priorities
Power Requirements:		
Power consumption:	12W Max	25W Max. (incl. SPR)
Voltage:	30-55 VDC	90-264 VAC, 50/60 Hz
Dimensions H/W/D (mm):	244 x 311 x 65.5	200 x 150 x 40
Weight:	2.5 Kg	0.47 Kg (SDA-1), 0.53 Kg (SDA-4H/ SDA-4s)

ST Type II (IDR)	Indoor Unit (IDR)
Interfaces:	RJ-45 10 Base-T, RJ-11 RS-232 Serial port, RF: TNC (optional)
Power Requirements:	
Power consumption:	12W Max
Voltage:	100-240 VAC, 50/60 Hz
Dimensions H/W/D (mm):	233 x 155 x 74.5
Weight:	1.43 Kg

Environmental

	Outdoor Unit	Indoor Unit
Operating Temperature:	-30˚C to +60˚C	0˚C to +50˚C

Standards Compliance, General

Safety:	EN 60950, UL 1950
Environmental:	ETS 300 019

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