

# symmetry SSU5200

## Outdoor WiMAX Subscriber Station

### Universal, versatile and highly effective

The symmetry SSU5200 is a universal (802.16-2004 or 802.16e-2005) WiMAX subscriber station designed for the deployment of fixed services in small- and medium-sized enterprises (SME), multi-dwelling/multi-tenant and residential applications.

Designed with versatility and network profitability in mind, the SSU5200 delivers a full range of revenue-generating services, including Internet access, VoIP, business IP PBX trunking, public and private data network access, Wi-Fi network backhaul, IP VPN and multimedia applications including streaming audio/video, conferencing, surveillance, video and gaming.

The SSU5200 consists of two units: outdoor and indoor. The outdoor unit houses the transceiver and an integrated antenna, while the indoor unit provides power and interconnection to both the outdoor unit and the subscriber's IP networking devices and phones. An optional VoIP/IP gateway indoor unit provides 2 POTS interfaces and 4 Ethernet ports as well as a WiFi option.

A software defined radio terminal, the SSU5200 is offered with two software options for the air interface and choices between a series of H-FDD and TDD RF profiles to best suit each targeted application requirement.

### Optimized overall air link throughput

- STC Alamouti coding/MRC and sub-channelling
- High power output terminal
- Built-in high gain antenna or external antenna port option
- Signal quality index display to facilitate installation while preserving optimal spectral efficiency

### Maximized service revenues

- Layer 2 or layer 3 switching options
- Rich multimedia experience with advanced QoS handling
- Internet service traffic policing
- Carrier-grade VoIP
- SME and MDU/MTU applications enabled with the support of VLAN switching and termination
- Supports wholesale model with flexibility for administration and authentication of user and CPE by the access network operator and/or service providers
- Available for both 802.16-2004 and 802.16e-2005

## Flexibility to meet subscriber needs and maximize return on investment

The SSU5200 is available in three distinct, cost-effective option packages, each offering a unique set of access interfaces designed to meet the specific needs of your subscriber base. This enables you to maximize your return on investment potential by establishing revenue models based on packaged subscriber services.

<b>Multimedia basic package</b>	Provides 1x Ethernet port. <i>Ideally suited for IP multimedia services to residential and small- and medium- sized businesses.</i>
<b>VoIP/IP gateway package</b>	Provides up to 4x Ethernet and 2 POTS lines <i>Perfect for individual residential and SOHO users</i>
<b>VoIP/IP gateway and WiFi package</b>	Provides 4x Ethernet, 2 POTS lines and WiFi <i>Perfect for individual residential and SOHO users with WiFi phones and laptops</i>



## Interfaces

<b>Multimedia basic package</b>	10/100Base-T [RJ-45 Unshielded]: One port with VLAN support
<b>VoIP/IP indoor gateway package with PoE</b>	10/100Base-T [RJ-45 Unshielded]: Four ports VLAN switch POTS [RJ-11]: Two ports
<b>VoIP/IP indoor gateway and WiFi package with PoE</b>	10/100Base-T [RJ-45 Unshielded]: Four ports VLAN switch POTS [RJ-11]: Two ports WiFi: 802.11g

## Services

<b>Network segmentation and prioritization</b>	VLAN: IEEE 802.1Q, 802.1D [802.1p]
<b>Packet switching</b>	Multimedia and VoIP gateway options: L2 Switching by 802.1D Bridging  Low latency Layer-2 switching and policy switching that enables easy inter-working with routers, gateways, firewall/NAT, IP PBX, media gateway, demilitarized zone (DMZ) host, multicast routers, Diffserv networks and MPLS switches.  VoIP/IP gateway option: Layer 3 switching: L3 gateway <ul style="list-style-type: none"> <li>• Network address port translation (one-to-many address mapping)</li> <li>• PPPoE client (option)</li> </ul>
<b>User traffic protocol</b>	IPv6, IPv4, PPPoE, L2TP, IPSec, PPTP, MPLS
<b>IP configuration</b>	<ul style="list-style-type: none"> <li>• IPCP for PPPoE mode</li> <li>• DHCP customer support or static configuration for the gateway</li> <li>• DHCP server support for local host IP configuration</li> <li>• Static default address for local web interface</li> </ul>
<b>Services and applications</b>	Residential and enterprise internet access Multimedia applications (video conferencing and gaming) VoIP (Integrated POTS or external gateway interoperability)
<b>Remote configuration and management</b>	NMS supports full-range of OAM&P functions SNMP v2/v3, and TFTP
<b>Local configuration management</b>	Web browser access
<b>Software maintenance</b>	Over-the-air software upgrades

# Technical specifications

## VoIP/IP gateway package services

<b>Signalling</b>	SIP, H.323, MGCP
<b>Codec</b>	G.711/G.729/G.723
<b>Voice processing</b>	Echo cancelling / voice activity detection / confort Noise generation
<b>FXO</b>	PSTN back-up VoIP/PSTN switching
<b>QoS</b>	L2 QoS VLAN based IP QoS (FXS Priority) QoS WFQ Diffserv
<b>VPN</b>	VPN SSL VPN Passthrough VPN IPSEC VPN L2TP VPN PPT
<b>Firewall</b>	NAT and Statefull Inspection Firewall
<b>WiFi</b>	WiFi 11g; WEP/WPA; WMM; Multiple SSID; Easy pairing
<b>IP gateway</b>	IP V4; UDP/TCP; ICMP; ARP; RARP; DHCP Server/ Client DHCP Relay/proxy; DNS relais/Proxy; Client IP Routing RIP1&2 NAT/PAT Firewall ALG Support (including H323,SIP,MGCP) DMZ Traceroute IGMP snooping/proxy
<b>Gateway management interface</b>	symmetryMX/Mxe EMS Telnet FTP Server / Client TFTP Server / Client SNMP HTTP Server / Client HTTPS SSL/TLS Web GUI multilingual CLI HTML remote management Multiple user support UPnP

## MAC layer features

<b>Convergence sub-layer service</b>	Packet over Ethernet/802.3, IPv4 over 802.3, IPv6 over 802.3
<b>Convergence sub-layer packet classification</b>	<ul style="list-style-type: none"> <li>• Extensive packet classification</li> <li>• Layer 2: IEEE 802.3 addresses and type, IEEE 802.1Q, IEEE 802.1D (802.1p)</li> <li>• Layer 3: IP addresses and protocol, differentiated Services Code Point / TOS</li> <li>• Layer 4: Port number and/or range</li> </ul>
<b>Convergence sub-layer traffic conditioning</b>	<ul style="list-style-type: none"> <li>• Traffic priority marking, per flow, multimedia queuing,</li> <li>• Traffic conformance metering, soft rate limiting /Traffic shaping,</li> <li>• Congestion control (WRED), latency and jitter control</li> </ul>
<b>Filters</b>	<ul style="list-style-type: none"> <li>• Broadcast and multicast storm,</li> <li>• Source and destination Mac filters; <ul style="list-style-type: none"> <li>• Broadcast, multicast filters,</li> <li>• Broadcast storm filters</li> </ul> </li> <li>• Access control list defined through classifier rules</li> </ul>
<b>QoS scheduler options</b>	<ul style="list-style-type: none"> <li>• Advanced scheduling algorithm with full QoS support.</li> <li>• Unsolicited grants (UGS), enhanced real time polling (ertPS) real-time polling (rtPS), non-real time polling (nrtPS) and best effort (BE)</li> </ul>
<b>Airlink optimization 802.16-2004 air interface</b>	<ul style="list-style-type: none"> <li>• Automatic retransmission reQuest (ARQ)</li> <li>• Payload header suppression</li> </ul>
<b>Airlink optimization 802.16e-2005 air interface</b>	<ul style="list-style-type: none"> <li>• Automatic retransmission reQuest (ARQ) and Hybrid – ARQ</li> <li>• Payload header suppression</li> <li>• Robust header compression</li> </ul>
<b>Service flow support</b>	<ul style="list-style-type: none"> <li>• Policy enforcement for each service flow</li> <li>• Each SS supports multiple classes of service</li> </ul>
<b>Security options 802.16-2004 air interface</b>	Authentication based on X.509 certificate
<b>Security options 802.16e-2005 air interface</b>	EAP Client TLS and TTLS End-to-end PKMV2 Authentication based on X.509 certificate

## Electrical, mechanical, environmental specifications

<b>Mechanical (W x H x D)</b>	203 x 193 x 76 mm
<b>Operating temperature</b>	-45 to +60°C (ETSI 300 019 Class 4.1e)
<b>Humidity</b>	5 to 95%
<b>Power supply</b>	110/240VAC
<b>SSU5200 Power consumption</b>	17 Watts

## Physical layer 802.16d-2004 software options

<b>Air interface</b>	IEEE 802.16-2004
<b>Frequency range</b>	2.5 GHz [2500MHz – 2695MHz] 3.5 GHz [3300 – 3800 MHz] 10.5 GHz [10.150 – 10.650 GHz]
<b>Channel bandwidth</b>	Scalable 2.5 GHz: 3.5, 5.0, 7.0 MHz TDD 3.5 GHz: 1.75, 3.5, 7.0 MHz H-FDD 3.5 GHz: 3.5, 5.0, 7.0 MHz TDD
<b>Duplexing</b>	H-FDD; TDD (dynamic partitioning)
<b>RF access scheme</b>	OFDM (256 FFT)
<b>Adaptive modulation</b>	64-QAM 3/4, 2/3 16-QAM 3/4, 1/2 QPSK 3/4, 1/2 BPSK 1/2
<b>Frame size</b>	5, 10 ms
<b>Maximum RF transmit power</b>	22 dBm
<b>Antenna type</b>	Integrated panel antenna (15 dBi) External N-type antenna port option for higher gain antennas
<b>Receiver sensitivity</b>	1.75MHz: -100dBm (BPSK 1/2) to -83 dBm (64 QAM 3/4)
<b>Cyclic prefix</b>	1/4, 1/8, 1/16, 1/32
<b>Smart antenna system / RF path diversity</b>	STC alamouti coding and maximum ratio combining MRC
<b>Channel coding</b>	Reed-salomon and convolutional coding; rate 1/2, 2/3, 3/4
<b>ATPC (automatic power control)</b>	Uplink power control with adaptive modulation
<b>Sub-channelling</b>	2, 4, 8 and 16 sub-channels
<b>DL:UL ratio (TDD)</b>	Configurable

## Physical layer 802.16e-2005 software options

<b>Air interface</b>	802.16e-2005 (IEEE 802.16-2004 as amended by IEEE 802.16-2005)
<b>Frequency range</b>	2.5 GHz [2500MHz - 2695MHz] 3.5 GHz [3300 – 3800 MHz]
<b>Channel bandwidth</b>	Scalable 2.5 GHz: 5.0, 10.0 MHz 3.5 GHz: 5.0, 7.0, 10.0 MHz
<b>Duplexing</b>	TDD (dynamic partitioning)
<b>RF access scheme</b>	SOFDMA ( 512, 1024 point FFT)
<b>Adaptive modulation</b>	64-QAM 1/2, 2/3, 3/4, 5/6 16-QAM 3/4, 1/2 QPSK 3/4, 1/2 QPSK 1/2 Repetitive coding 1x, 2x, 4x, 6x
<b>Frame size</b>	5 ms (TDD)
<b>Maximum RF transmit power</b>	22 dBm
<b>Antenna type</b>	Integrated panel antenna (15 dBi) External N-type antenna port option for Higher gain antennas.
<b>Receiver sensitivity</b>	For 5MHz : -97 ( QPSK ½ 1x ) -105 ( QPSK ½ 6x)
<b>Cyclic prefix</b>	1/8
<b>Smart antenna system / RF path diversity</b>	2X2 MIMO, STC Alamouti coding & MRC
<b>Channel coding</b>	Convolutional coding with tail biting Convolutional turbo coding
<b>ATPC (Automatic Power Control)</b>	Open and closed loop power control with adaptive modulation
<b>Sub-carrier allocation</b>	PUSC, FUSC, AMC 2x3
<b>DL:UL ratio</b>	Configurable

## WiMAX. Clearly here and now

SR Telecom is a pioneer and acknowledged leader in the broadband wireless access (BWA) industry. With 26 years of experience in designing, developing and deploying wireless access networks for top-tier carriers around the world, SR Telecom's BWA solutions have been installed in over 110 countries, serving more than two million people.

The first company to commercially deploy an OFDM-based broadband solution, SR Telecom is the only BWA vendor with a decade of experience deploying advanced WiMAX technologies in end-to-end solutions. We provide top-tier carriers with the industry's highest link budget and verifiable performance metrics, not just predictions on how a product will perform based on lab testing. With this real-world experience driving our product innovation, SR Telecom focuses on delivering premium broadband technology, and business-driven services that exceed operators' expectations and drive their business forward. Our solutions and support strategies are key enablers for large-scale WiMAX rollouts by top-tier carriers.

