



symmetryMX 10.5 GHz

Wireless High-Performance Ethernet Services for Enterprises

Based on the WiMAX Forum certified, carrier-class SYMMETRY platform, SR Telecom introduces **symmetryMX™** 10.5 GHz. A state-of-the-art network, **symmetryMX** leverages cost-effective and sophisticated WiMAX technology in the widely-available 10.5 GHz band, where sufficient spectrum is available to build large-scale networks to deliver enterprise-class multi-megabit services. **symmetryMX** sets new benchmarks for carrier-class multipoint microwave networks that will radically change operators' business cases and expand their addressable markets.

Business Rationale

symmetryMX at 10.5 GHz enables wireless network operators to profit from the worldwide growth of managed, multi-service VPNs, which are rapidly becoming the dominant business communications service. Up to now, operators have been restricted by expensive and legacy-oriented wireless platforms. With **symmetryMX** 10.5 GHz, operators targeting the enterprise market can create attractive VoIP, video, LAN, and Internet service bundles over a single platform.

A unique WiMAX platform for enterprise services

symmetryMX is, above all, a unmatched platform for delivering IP and Ethernet based services. The core requirement for successful VPN services over a wireless link is a robust, adaptable Quality of Service (QoS) engine to identify different types of traffic and apply the appropriate QoS to each service. **symmetryMX** was built from the ground up around an agile, massively scalable QoS system that is unique in the WiMAX industry. With **symmetryMX**, operators can define tailored services - on the fly - that ideally match users' applications. Per-service flow traffic management ensures that the Quality of Experience for data, VoIP, and video matches the user expectation (i.e. the SLA), and that network resources are utilized to the maximum.



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End-user benefits

With wireless VPN services provided over a **symmetryMX** connection, end-users benefit from:

- The efficiency and convenience of a single communications “pipe”, from a single provider, and with a single bill.
- Quicker access to service than would be possible with a wireline connection, and from locations beyond the range of fiber infrastructure.
- Centralized IT functions through the VPN. Symmetry’s Layer 2 operation and powerful VLAN translation and QinQ techniques allow the end-user to use whatever VPN protocols they choose.
- Independent management of their network configurations. User VLANs and operator VLANs remain separate, reducing operational complexity and expense on both sides.

Operator Benefits

- **symmetryMX** advanced QoS mechanisms deliver high quality managed VPN services for the end-user, and allow operators to oversubscribe network resources to dramatically change the economics of 10.5 GHz networks.
- **symmetryMX** 10.5 GHz has the bandwidth and multi-line capabilities to serve multiple dwelling units cost-effectively in terms of both CAPEX and OPEX.
- **symmetryMX** is a single integrated system that supports multiple modes of operation: 2.5 GHz, 3.5 GHz, and 10.5 GHz; all using a common base station platform and NMS.
- **symmetryMX** 10.5 GHz is an ideal backhaul for 2.5/3.5 GHz WiMAX base stations from SR Telecom or other suppliers. An SR Telecom solution offers the added benefit of end-to-end service mapping using a single NMS.



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symmetryMX 10.5 GHz is based on SR Telecom’s proven CBS5000 base station and SSU5100 outdoor WiMAX subscriber station.



Physical layer

Air Interface	802.16-2004
Frequency Band	10.5 GHz (10150 to 10650 MHz)
Channel Bandwidths	FDD - 3.5, 7.0 MHz
Adaptive Modulation	64 QAM (3/4, 2/3), 16 QAM (3/4, 1/2), QPSK (3/4, 1/2), and BPSK (1/2)
Frame Size	5ms, 10ms
Cyclic Prefix	1/4, 1/8, 1/16, and 1/32 (configurable)
Diversity Polarization Diversity	Two-branch Tx/Rx, with MRC and STC
Sub-channeling	2, 4, 8, and 16 channels ATPC (Automatic Power Control) Uplink closed loop power control with adaptive modulation

Services

Network Segmentation and Network Prioritization	VLAN: IEEE 802.1Q; Q-in-Q [802.1ad]; 802.1D [802.1p]
Convergence Sub-layer Service	Ethernet/802.3 and IP over Ethernet
Packet Switching	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.
User Traffic Protocol	IPv4, PPPoE, L2TP, IPSec, PPTP, MPLS
IP Configuration	Dynamic Host Configuration Protocol (DHCP) support or static configuration
Grade of Service (GoS)	Configurable and predefined GoS profiles SLA Protection: Admission Control and Maximum Over Subscription Ratio protection
Backhaul network port	100/1000Base-SX/LX [SFP] 100/1000Base-T
WBRU interfaces (IDU-ODU Interconnect)	Open Base Station Architecture Initiative (OBSAI), • Delay compensated for long range support to 5 Km
Synchronization source	GPS antenna port; Internal synchronization source: Stratum 3; Accuracy +/- 4.7ppm; Capture range +/- 4.7ppm; Stability 0.37ppm/24 hours
Synchronization cascade interface	Cascade Input: LVDS [RJ-45 Shielded] Cascade Output: LVDS [RJ-45 Shielded]
Network segmentation and prioritization	VLAN: IEEE 802.1Q; Q-in-Q [802.3ad]; 802.1D [802.1p]

Base Station RF Characteristics

Maximum RF Transmit Power	20 dBm
Antenna type (typical)	Sectoral Polarization: Vertical or horizontal Sector size: 60 or 90 degrees; External antenna option also available
Sectors	Up to 3 sectors with diversity

Subscriber Station RF Characteristics

Maximum RF Transmit Power	18 dBm
Antenna type (typical)	Direction Polarization: Vertical or horizontal Beamwidth: 7 degrees; External antenna option also available

Typical Applications

Fixed and nomadic applications; including:
IP (video surveillance, distributed gaming, VoIP and multimedia conferencing, streaming media, instant messaging, Web browsing, media content download, managed VPN, FTP, and E-mail, SCADA system)
Metro Area Network VLAN services
Agile QoS-enabled Enterprise VPN,
Industrial applications and Backhaul solution.

MAC layer features

Convergence Sub-layer Packet Classification	Extensive Packet Classification Layer 2: IEEE 802.3, IEEE 802.1Q, IEEE 802.1D (802.1p) Layer 3: IP, Differentiated Services Code Point / TOS Layer 4: Port number and/or range
Convergence Sub-layer Traffic Conditioning	Traffic priority marking Per flow, Multimedia queuing, Traffic conformance metering Token Bucket Traffic shaping, Congestion control (WRED) Latency and jitter control
Filters	Source and Destination Mac filters; Broadcast, Multicast filters, Broadcast Storm Filters, Access control list defined through classifier rules.
QoS Scheduler Options	Advanced Scheduling Algorithm with full WiMAX QoS support. Airlink Optimization Automatic Retransmission reQuest (ARQ), Uplink power control Payload Header Suppression, Dynamic Bandwidth Admission Control Maximum Over Subscription Ratio Control, Multicast group polling
Security Options	Encryption: 3DES and AES (future) Secure Authentication

Subscriber Station Specifications

Subscriber interface	10 / 100BaseT
Peak Data Rate	10 Mbps
Number of Concurrent service flows	64

Electrical, mechanical, environmental features

Input Voltage	-48 VDC (nominal) Input
Consumption	• 24 W at 48 VDC • 35 W at VAC input using the PoE unit
Dimensions	• Width: 19 cm (7.6 in.) • Height: 20 cm (8 in.) • Depth: 8 cm (3 in.), extends to 8.8 cm (3.5 in.) • Weight: 3 kg (6.6 lb.)
Operating Temperature Outdoor	-45°C to +60°C (-49°F to +140°F) ETS 300 019-2 Class 4.1E Range

About SR Telecom & Co.

SR Telecom & Co. is a leader in innovative broadband wireless access (BWA) solutions for voice, Internet and enterprise services. Our team has over 25 years of experience in designing, developing and deploying wireless access networks for top-tier organizations around the world.

SR Telecom & Co. focuses on delivering premium broadband technology and business-driven services that exceed operators' expectations and drive their business forward. SR Telecom is the only BWA vendor with a decade of experience deploying advanced WiMAX technologies in end-to-end solutions. Operators rely on us for rock-solid network stability. With networks of 200,000 subscribers built on our technology, real-world experience drives our product innovation. Our solutions and support strategies are key enablers for large-scale WiMAX rollouts.



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