

DATA SHEET SURFBOARD® SBG6580 SERIES DOCSIS 3.0 WIRELESS GATEWAY

SURFBOARD® SBG6580

SERIES DOCSIS 3.0 WIRELESS GATEWAY

Strengthen your broadband leadership — Count on Motorola's SURFboard DOCSIS®/ EuroDOCSIS 3.0 solutions to help you deliver innovative, ultra-broadband data services and advanced high-bandwidth home networking to your premium customers.



Next Generation High-Bandwidth Services and Home Networking in a Stylish Package

The SBG6580 SURFboard DOCSIS 3.0 Wireless Gateway enables the delivery of innovative ultra-broadband data and multimedia services as well as high-bandwidth home networking. Designed for seamless mobility, Motorola's SBG6580 is a fully integrated all-in-one home networking solution that combines the functionality of a DOCSIS/EuroDOCSIS 3.0 cable modem, four-port 10/100/1000 Ethernet switch with advanced firewall, and an 802.11n Wi-Fi access point in a sleek, stylish package for the sophisticated consumer. It's the perfect networking solution for the home, home office, or small business, allowing users to create custom networks with a high-speed ultra-broadband internet connection and the ability to share files and peripheral devices across the home networks. Cost-effective, efficient, and secure, the SBG6580 enables users to maximize the potential of their existing resources, while benefiting from next generation high-bandwidth services.

Increased Data Rates

Utilizing the power of DOCSIS 3.0, the SBG6580 enables channel bonding of up to eight downstream and four upstream channels – which allows an operator to offer their customers advanced multimedia services, capable of data rates of over 300 Mbps in DOCSIS and 400 Mbps in EuroDOCSIS in the received (downstream) data stream and over 100 Mbps in the send (upstream) data stream.



Highlights

Easy to Setup and Use
Plug-and-play installation

Wi-Fi pairing button for easy Wi-Fi Protected Setup™ (WPS) Wi-Fi connection

Supports standard internet browser software

Front panel LEDs indicate status and simplify troubleshooting

User-friendly online diagnostics and configuration

Advanced Services Ready

DOCSIS/EuroDOCSIS 3.0 certified

Channel bonding of up to eight downstream and four upstream channels capable of data rates of over 300 Mbps in DOCSIS and 400 Mbps in EuroDOCSIS in the received (downstream) data stream and over 100 Mbps in the send (upstream) data stream

The SBG6580's high-speed services enable operators to:

- Protect their installed base of premium high-speed data customers.
- Deliver high-bandwidth, multimedia services to residential customers.
- Deliver competitive, high-capacity commercial services to their business customers.

The SBG6580 eliminates the need for stand-alone routers, hubs, and access points. Its four, one-gigabit Ethernet RJ-45 ports, an integrated 802.11n Wi-Fi access point with an internal 2 x 2 MIMO antenna array, and switched on-board radios (2.4 or 5 GHz) enable users to maximize the high-bandwidth potential of their home or business network.



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Wi-Fi Access

One way to avoid the challenges of rewiring or contending with varying wiring in the home is to eliminate wires altogether. The SBG6580 is equipped with a next-generation 802.11n Wi-Fi access point.

802.11n: 802.11n, the most current superset of the widely-used Wi-Fi standard utilized by consumers in more than 100 million deployed PCs and mobile devices, is a compelling networking option for operators and consumers. The SBG6580's 802.11n integrated access point eliminates the need for wires altogether, enabling users to easily wirelessly network all of their 802.11 a/b/g/n equipped devices.

Dual Radio Operation: The SBG6580 is configured with radio technology that offers 802.11 b/g at 2.4 GHz and 802.11n at 5 GHz to support maximum LAN flexibility. Switched radio operation enables the SBG6580 to work with the lowest common denominator Wi-Fi peripherals, allowing consumers to network previous- and next-generation computers, gaming consoles, and other peripherals anywhere in the home.

With Motorola's SURFboard integrated home networking solutions, service providers can provide seamless interaction among consumer electronics, mobile handsets, and PC devices, enabling high-quality media streaming, and supporting efficient sharing of media within and outside of the connected home. Capable of supporting converged IP-based entertainment services, the SBG6580 enables the delivery of advanced whole home entertainment services and a consumer's personal media experiences.

Built-In Security

The SBG6580 is equipped with a number of security features to offer consumers peace of mind, including:

- Firewall with DoS protection and intrusion prevention
- DHCP, NAT, VPN endpoint, VPN tunneling
- Wi-Fi security WEP/WPA/WPA2 with easy setup wizard
- User-friendly, secure mobile pairing
- Wi-Fi Wizard removes end-user complexity for secure PC client setup
- Pushbutton configuration for WPS compliant clients

User-friendly Installation

Motorola's integrated SURFboard solutions include stateful firewall protection and state-of-the-art Wi-Fi network security. They are also shipped with a CD-ROM including Motorola's Wi-Fi installation wizard – an easy-to-use secure Wi-Fi network setup and connection tool that seamlessly configures a secure Wi-Fi connection on a user's machine. When the Wi-Fi wizard is finished, a secure WPA (Wi-Fi Protected Access)-encrypted Wi-Fi connection is established to the gateway, protecting the user's machine from hacker attacks. Motorola's enhanced embedded software facilitates Wi-Fi deployments with high levels of quality, reliability, and customer satisfaction, with low operational and support costs for the MSO.

Internal MoCA Reject Filter

This feature eliminates the possibility for MoCA interference to the IP Signals with the implementation of an internal 1 GHz low pass filter. This reduces both the complexity and the cost of installing an external filter. MoCA is being implemented by Cable Operators as a means to transport video signals to other devices on the network. These signals can interfere with the DOCSIS signal reception by the Gateway. The filter removes the interference before it disrupts IP data. You can verify the presence of the filter by a stamped indication on the rear panel that reads 1 GHz LPF. This filter will not interfere with any of the IP traffic for which the Gateway is used.

Service Assurance

Supporting the Wi-Fi home network is a new challenge for the cable industry. Motorola Wi-Fi Gateways assist operators in launching wireless home networks for additional revenue opportunities and subscriber satisfaction. By combining the highest-performing and lowest cost of ownership modems in the industry, with easy-to-use Wi-Fi installation and pairing tools, as well as advanced remote management features, Motorola is offering an all-in-one approach to broadband home networking. In addition, Motorola's field-proven EDGE Device Management Platform provides the MSO with intelligent management, auto-provisioning, and remote management features to improve accuracy, efficiency, and customer satisfaction. These value-adding features enable remote device administration for improved accuracy and reduced support costs. Motorola's EDGE platform is a scalable, carrier-grade software platform that enables cable operators to remotely access, configure, monitor, and troubleshoot their full portfolio of consumer devices, home networks, and services.



Highlights (continued)

1 GHz-capable tuners

Supports IPv4 and IPv6 to expand network addressing capabilities

Versatile and Convenient

Backwards compatible to 802.11a/b/g

Backwards compatible to DOCSIS/EuroDOCSIS 1.x and 2.0

Integrated 802.11n Wi-Fi access point, 2 x 2 MIMO antenna array

Switched onboard radios: 2.4 or 5 GHz

Four one-gigabit Ethernet ports enable flexible, high-speed connectivity with Auto Negotiate and Auto MDIX

Compatible with Windows®, Macintosh®, and Unix® computers

Support for multicast IP services



DATA SHEET SURFBOARD® SBG6580 SERIES DOCSIS 3.0 WIRELESS GATEWAY**General Specifications**

Cable Interface	FConnector, female 75 Ω
Network Interface	Four One-Gigabit (10/100/1000) Ethernet ports
Wi-Fi Interface	802.11n Wi-Fi (backwards compatible with 802.11a/b/g)
Dimensions	6.6 in x 1.9 in x 6.8 in (167 cm x 50 cm x 171.7 cm)
Regulatory	RoHS compliant, FCC, UL listed (U.S. and Canada), Industry Canada, CE, Underwriters Laboratory Environmental Certification, CoC compliant, MEPS Compliant

DOCSIS/EuroDOCSIS 3.0 certified
(interoperable with DOCSIS/EuroDOCSIS 1.0, 1.1, and 2.0)

Input Power

North America	105 to 125 VAC, 60 Hz
Outside North America	100 to 240 VAC, 50 to 60 Hz

Environmental

Operating Temperature	32 F to 104 °F (0 °C to 40 °C)
Storage Temperature	-22 °F to 158 °F (-30 °C to 70 °C)
Operating Humidity	5 to 95% R.H. (non-condensing)

Downstream

Modulation	64 or 256 QAM
Capture Bandwidth	Dual 32 MHz Capture windows
Maximum Theoretical Data Rate	
DOCSIS	343.072 Mbps (8 channels) / 42.884 (single channel) @ 256 QAM at 5.36 Msym/s
EuroDOCSIS	444.928 Mbps (8 channels) / 55.616 (single channel) @ 256 QAM at 6.952 Msym/s
Bandwidth	
DOCSIS	≤ 48 MHz
EuroDOCSIS	≤ 64 MHz
Symbol Rate	
DOCSIS	64 QAM 5.057 Msym/s; 256 QAM 5.361 Msym/s
EuroDOCSIS	64 QAM 6.952 Msym/s; 256 QAM 6.952 Msym/s
Operating Level Range	-15 to 15 dBmV
Bonded Channel RF	
Level Tolerance	10dBmV
Input Impedance	75 Ω (nominal)
Frequency Range	DOCSIS and EuroDOCSIS 108 to 1002 MHz (edge to edge)
Frequency Plan	
EuroDOCSIS	Annex A
DOCSIS	Annex B
J-DOCSIS	Annex D
Security	DOCSIS 3.0 Security (BPI+, EAE, SSD)
Network Management	SNMP v2 & v3
Provisioning	Supports IP addressing using IPv4 and/or IPv6 (dual stack)

Upstream

Modulation	QPSK and 8, 16, 32, 64, 128 QAM, optional 256 QAM
Maximum Channel Rate	
DOCSIS	131.072 Mbps (4 channels) / 32.768 Mbps (single channel): @ 128 QAM at 6.4 MHz
EuroDOCSIS	131.072 Mbps (4 channels) / 32.768 Mbps (single channel): @ 128 QAM at 6.4 MHz
Channel Width	200 kHz, 400 kHz, 800 kHz, 1.6 MHz, 3.2 MHz, 6.4 MHz
Symbol Rates	160, 320, 640, 1280, 2560, 5120 ksym/s

Highlights (continued)

Support for up to eight SSIDs for end user and Operator flexibility in Wi-Fi networks and services

Efficient

Stylish and space-saving enclosure

Reliable and Secure

Wi-Fi security WEP/WPA/WPA2

Advanced firewall with DoS protection and intrusion prevention

Wi-Fi Wizard for secure PC client setup

Remote configuration and monitoring from the headend using SNMP and TFTP

Enhanced security: supports AES traffic encryption

Provider Benefits

Flexible pricing options

Greater pricing flexibility resulting from multi-service packaging and migration of customers to higher-revenue / margin Wi-Fi offerings

Remote configuration and monitoring from the headend using SNMP, TFTP, and TR069



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Upstream (continued)

Operating Level Range	Level range per channel (Multiple Transmit Channel mode disabled, or only Multiple Transmit Channel mode enabled with one channel in the TCS)
DOCSIS/EuroDOCSIS	
TDMA	
	Pmin to +57 dBmV (32 QAM, 64 QAM)
	Pmin to +58 dBmV (8 QAM, 16 QAM)
	Pmin to +61 dBmV (QPSK)
S-CDMA	
	Pmin to +56 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
Level range per channel (two channels in the TCS)	
TDMA	
	Pmin to +54 dBmV (32 QAM, 64 QAM)
	Pmin to +55 dBmV (8 QAM, 16 QAM)
	Pmin to +58 dBmV (QPSK)
S-CDMA	
	Pmin to +53 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
Level range per channel (three or four channels in the TCS)	
TDMA	
	Pmin to +51 dBmV (32 QAM, 64 QAM)
	Pmin to +52 dBmV (8 QAM, 16 QAM)
	Pmin to +55 dBmV (QPSK)
S-CDMA	
	Pmin to +53 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
Output Impedance	75 Ω (nominal)
Frequency Range	DOCSIS 5-42 MHz (edge to edge), EuroDOCSIS and optional DOCSIS 5 to 65 MHz (edge to edge)
Compatibility	PC: 90496, Pentium, or later; Windows Vista™, 2000, or XP or Linux® with Ethernet connection (older versions of Windows, although not specifically supported, will work with this cable modem) Macintosh: Power PC or later; OS 9 or higher, Ethernet connection UNIX: Ethernet connection Home Networking: Ethernet router or wireless access point

Network

Gateway	DHCP, NAT, VPN tunneling; static routing and dynamic IP routing (RIPv1, RIPv2); SPI firewall with DoS protection and intrusion prevention; port, packet, and URL keyword filtering; full suite of ALGs; UPnP IGD 1.0; L2TPv3, L2VPN, eRouter
Wi-Fi LAN	802.11a/b/g/n Wi-Fi, WDS bridging, 802.11e WMM admission control, QoS
Power Management	802.11e WMM power save/U-APSD (Unscheduled-Automatic Power Save Delivery)
802.11i Security	Default security enabled: WPA-PSK WEP-64/128, WPA, WPA2, TKIP, AES, 802.1x, 802.11i (pre-authentication)
Wi-Fi Pairing	User-friendly Wi-Fi protected setup (WPS) for connection with WPS compatible device
Regulatory Domains	To include US, Canada, ETSI, World
Receiver Sensitivity	> -90 dBm at 11 Mbps; > -74 dBm at 54 Mbps

All features, functionality, and other product specifications are subject to change without notice or obligation.



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