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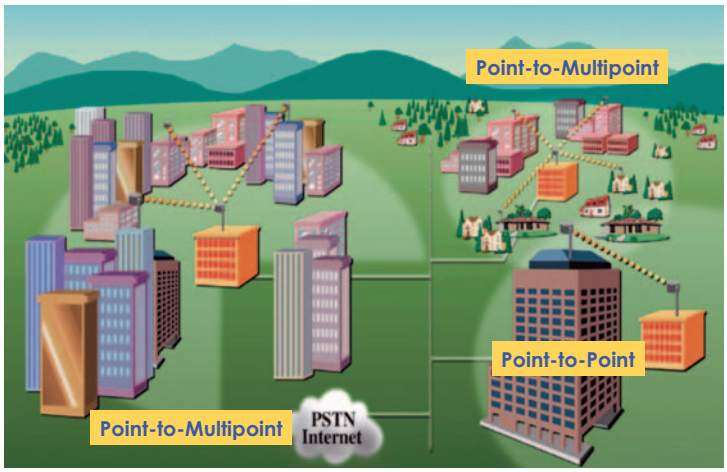
MOTOROLA CANOPY™ WIRELESS BROADBAND

2.4 GHz SYSTEM



2.4 GHz Canopy modules are used to augment existing Canopy networks by providing longer range and penetration to reach more remote subscribers. The Canopy system takes advantage of the unlicensed spectrum to deliver high quality broadband service to subscribers beyond the reach of other technologies. The Canopy system provides reliable high-speed service on a widespread basis without significant investments in equipment costs, RF licenses and deployment expenses.

System Overview

The Canopy system operates in point-to-point and point-to-multipoint configurations at 2.4, 5.2 and 5.7 GHz. The 2.4 GHz Canopy modules support point-to-point links delivering 13 Mbps of effective throughput for distances up to 56 km (35 miles) as well as point-to-multipoint links delivering more than 6 Mbps of throughput for distances up to 24 km (15 miles).

Designed to deliver consistent and reliable wireless broadband service, the Canopy system gracefully scales to support large deployments. This is achieved through the system's unique synchronization capabilities using the Global Positioning System (GPS) as well as Canopy's inherent interference techniques. The system's synchronization allows network operators to re-use frequencies and add capacity while consistently ensuring consistency in the quality of service to customers. As a result, subscribers can experience carrier grade service – even those at the outer edge of the network. Synchronization also helps ensure the Canopy system modules' transmissions do not interfere with each other. Canopy system modules are also extremely tolerant to interference from other sources. The Canopy system's industry-leading nominal Carrier to Interference (C/I) ratio of 3 dB ensures reliable communication when other transmitters are present.

The Canopy system hardware draws little power and its packaging is unobtrusive. Installation is easy, and the built-in audio and visual feedback indicators allow the unit to be installed with no special training. These characteristics facilitate initial deployment and network expansion as capacity needs increase.

2.4 GHz System Benefits

The Motorola Canopy system quickly delivers reliable, high quality broadband access while requiring significantly lower capital investment and operating deployment costs than other broadband technologies. The 2.4 GHz system benefits also include the following:

- **Enhance Network Coverage** with range up to 24 km (15 miles) between the Access Point and Subscriber Module.
- **Frequency options** allow flexibility in designing the network.

2.4 GHz System Features

Application	Part #	Rate	Throughput	Range
Point-to-Point	2400BH	10 Mbps	7.5 Mbps	8 km (5 mi)
	2400BHRF	10 Mbps	7.5 Mbps	56 km (35 mi)
	2400BHRF20	20 Mbps	13 Mbps	56 km (35 mi)
Point-to-Multipoint	2400SM	10 Mbps	6 Mbps	8 km (5 mi)
	2400SMRF	10 Mbps	6 Mbps	24 km (15 mi)

Availability

The 2.4 GHz Canopy products may be ordered now.

For more information about how the Canopy system can extend your network and services, provide competitive advantage and outstanding ROI, call 1-866-515-5825 or visit us at www.motorola.com/canopy

CANOPY ACCESS POINT MODULE 2400AP

Operating Frequency Range — ISM band	2.4 GHz
Access Method	TDD/TDMA
Signaling Rate	10 Mbps, 6 Mbps Throughput
Modulation Type	High Index BFSK (Optimized for interference rejection)
Carrier to Interference (C/I)	3dB nominal,with receiver input @ -65 dBm and higher.
Receiver Sensitivity	Minimum -83dBm 10^{-4} BER
Antenna Beam Width	3dB antenna beam width 60 degrees, Azimuth and Elevation
Operating Range (all weather)	Up to 8 km (5 miles) with integrated antenna. Up to 24 km (15 miles) with passive reflector only on the Subscriber Module side.
DC Power	0.30 Amp @ 24 VDC (7.2 watts) typical, 8.4 Watts max.
Interface	10/100 BaseT, half/full duplex — Rate auto negotiated (802.3 compliant)
Protocols Used by CANOPY	IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP
Encryption	DES, AES
Software Upgrade Path	Remotely downloaded into FLASH via RF link
Network Management	HTTP, TELNET, FTP, SNMP Version 2C
Wind Survival	190 km/hr (118 miles/hr)
Operating Temperature	-40°C to +55°C (-40°F - +131°F)
Weight	0.45 kg (1 lb.)
Dimensions	29.9 cm H x 8.6 cm W x 8.6 cm D (11.75" H x 3.4" W x 3.4" D)

CANOPY SUBSCRIBER MODULE 2400SM

Operating Frequency Range — ISM band	2.4 GHz
Access Method	TDD/TDMA
Signaling Rate	10 Mbps, 6 Mbps Throughput
Modulation Type	High Index BFSK (Optimized for interference rejection)
Carrier to Interference (C/I)	3dB nominal, with receiver input @ -65 dBm and higher.
Receiver Sensitivity	Minimum -83dBm 10^{-4} BER
Antenna Beam Width	3dB antenna beam width 60 degrees, Azimuth and Elevation, 17 degrees with passive reflector
Operating Range (all weather)	Up to 8 km (5 miles) with integrated antenna. Up to 24 km (15 miles) with passive reflector.
DC Power	0.30 Amp @ 24 VDC (7.2 watts) typical.
Interface	10/100 BaseT, half/full duplex — Rate auto negotiated (802.3 compliant)
Protocols Supported by CANOPY	Switched Layer 2 Transport with support for all common Ethernet protocols including IPV6, NetBIOS, DHCP, IPX, etc.
Protocols Used by CANOPY	IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP
Encryption	DES, AES
Software Upgrade Path	Remotely downloaded into FLASH via RF link
Network Management	HTTP, TELNET, FTP, SNMP Version 2C
Wind Survival	190 km/hr (118 miles/hr)
Operating Temperature	-40°C to +55°C (-40°F - +131°F)
Weight	0.45 kg (1 lb.)
Dimensions	29.9 cm H x 8.6 cm W x 8.6 cm D (11.75" H x 3.4" W x 3.4" D)

CANOPY BACKHAUL MODULE 2400BH

Operating Frequency Range — U-NII Mid band	2.4 GHz
Access Method	TDD/TDMA
Signaling Rate	10 Mbps (7.5 Mbps Throughput) or 20 Mbps (13 Mbps Throughput)
Modulation Type	High Index 2-level or 4-level Frequency Shift Keying (FSK) (Optimized for interference rejection)
Carrier to Interference (C/I)	3dB nominal at 10 Mbps, with receiver input at –65dBm and higher
Receiver Sensitivity	Minimum -83dBm 10^{-4} BER @ 10 Mbps, -77dBm 10^{-4} BER @ 20 Mbps
Antenna Beam Width	3dB antenna beam width 60 degrees, Azimuth and Elevation, 17 degrees with passive reflector
Operating Range (all weather)	Up to 8 km (5 miles) with integrated antenna on 10 Mbps equipment. Up to 5 km (3 miles) with integrated antenna on 20 Mbps equipment. Up to 56 km (35 miles) for 10 Mbps and 20 Mbps equipment with passive reflector on both sides.
DC Power	0.34 Amp @ 24 VDC (8.2 watts) typical, 9.1 watts max.
Interface	10/100 BaseT, half/full duplex. Rate auto negotiated (802.3 compliant)
Protocols Supported by CANOPY	Switched Layer 2 Transport with support for all common Ethernet protocols including IPV6, NetBIOS, DHCP, IPX, etc.
Protocols Used by CANOPY	IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP Version 2C
Encryption	On 10 Mbps Equipment DES or AES, on 20 Mbps Equipment DES only
Software Upgrade Path	Remotely downloaded into FLASH via RF link
Network Management	HTTP, TELNET, FTP, SNMP
Wind	190 km/hr (118 miles/hr)
Operating Temperature	-40°C to +55°C (-40°F - +131°F)
Weight	0.45kg (1 lb.)
Weight With Passive Reflector	3 kg (6.5 lbs.)

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