

# Motorola Canopy™ Wireless Broadband System

*(Can be configured for either Point-to-Point or Point-to-Multipoint)*

Canopy is a wireless Broadband technology that provides reliable, scalable and secure high speed internet access and private network interconnection. Its design allows for a cost-effective "last-mile" delivery of high speed IP based, data, voice and video traffic. Canopy is well suited to deliver data, voice and video to enterprises, government agencies, municipalities, factories, utility companies, schools and universities as well as individual users.

The Canopy system uses Point-to-Point and Point-to-Multipoint networks that can span distances ranging from two to 10 miles (3-15km) in a multipoint configuration, to as many as 35 miles (50km) in a Point-to-Point configuration.\*

The basic building blocks of a Canopy system are:

**Access Point (AP),** is the central point for distributing traffic from the LAN, switch, or router to the various users, buildings, LANs and other network devices within the coverage area.

**Subscriber Module (SM),** the receiver and access gateway located at the end-users premise that needs connection to the Access Point. It in turn connects to LAN, switch, router or other networking devices such as servers, IP-PABX, etc. located at the premise.

**Backhaul Unit (BH)** provides the connection between Access Points or cluster of Access Points or from a service provider, switching station or headquarters of a private enterprise to an Access Point or cluster of access Points. Backhaul unit also serve to connect a single building or user located in remote location that is not served by a multipoint network.

The Access Point and Subscriber Modules and Backhaul are compact and light weight units designed to be mounted outdoors. The system is easy to configure and deploy.

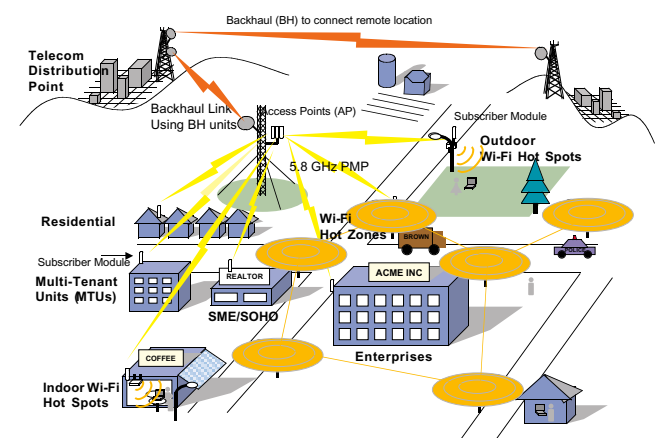
The Canopy solution also delivers outstanding performance using a modulation scheme that improves the quality of data delivery and mitigates interference from other systems. Motorola Canopy platform offers industry leading data security with advanced over the air encryption. Data delivery with Canopy is reliable and secure.

The Motorola Canopy Advantage Platform enables wireless broadband service providers to expand into competitive markets with the best broadband wireless platform for Data and Voice over Internet Protocol (VoIP). Network operators can increase revenue from existing users and add subscribers with attractive high-throughput offerings.



The Canopy Advantage platform is built on the field proven Canopy system and includes the high level of interference tolerance, scalability, signal reliability and ease of installation in all Canopy equipment. It is the leading broadband wireless solution for Voice over Internet Protocol (VoIP) by offering reliable, high throughput services. In addition, it also provides protection for your investment by providing compatibility with your existing network and by being upgradeable to meet future performance requirements.

- Point-to-point configuration\*\* up to 10-35 miles (16-50km) at 6-14 Mbps
- Point-to-multipoint configuration\*\* up to 2-10 miles (3-15km) at 4 - 7 Mbps



\*Motorola Canopy™ Wireless Broadband System 5.7 GHz backhaul with reflector kit

\*\* At time of order product will be configured to user specifications

Note: Frequency bands available are dependent on country regulation.  
Please check with local regulatory for details.

# Motorola Canopy™ Wireless Broadband System Specifications

|   | CANOPY ACCESS POINT  | CANOPY SUBSCRIBER MODULE   | CANOPY BACKHAUL MODULE  |
|---|--|--|---|
| <b>Operating Frequency Range U-NII Mid band</b> |  | 5.2 GHz Access Point: 5.25 to 5.35 GHz;<br>5.7 GHz Access Point: 5.725 to 5.825 GHz<br>2.4 GHz Access Point: 2.4150 to 2.4575 GHz  |   |
| <b>Access Method</b>                            | TDD/TDMA   | TDD/TDMA   | TDD/TDMA  |
| <b>Signaling Rate</b>                           | 10 Mbps  | 10 Mbps  | 10 Mbps/ 20 Mbps(5.7 GHz only)  |
| <b>Modulation Type</b>                          | High Index BFSK (Optimised for interference rejection)   | High Index BFSK (Optimised for interference rejection)   | High Index BFSK (Optimised for interference rejection)  |
| <b>Carrier to Interference</b>                  | 3dB 10 <sup>-4</sup> BER @ -65 dBm   | 3dB 10 <sup>-4</sup> BER @ -65 dBm   | 3dB 10 <sup>-4</sup> BER @ -65 dBm  |
| <b>Receiver Sensitivity</b>                     | -83dBm 10 <sup>-4</sup> BER  | -83dBm 10 <sup>-4</sup> BER  | -83dBm 10 <sup>-4</sup> BER   |
| <b>Operating Range</b>                          | Up to 3 kms with integrated antenna in the 5.2 GHz band.<br>Up to 15 kms with passive reflector in the 5.7 GHz band.<br>Up to 8 kms with integrated antenna in the 2.4 GHz band.<br><br>Up to 24 kms with passive reflector in the 2.4 GHz band. | Up to 3 kms with integrated antenna in the 5.2 GHz band.<br>Up to 15 kms with passive reflector in the 5.7 GHz band.<br>Up to 8 kms with integrated antenna in the 2.4 GHz band.<br><br>Up to 24 kms with passive reflector in the 2.4 GHz band. | Up to 3 kms with integrated antenna in the 5.2 GHz band.<br>Up to 50 kms with passive reflector on both side in the 5.7 GHz band.<br>Up to 8 kms with integrated antenna on the 10Mbps in the 2.4 GHz band.<br>Up to 5 kms with integrated antenna on the 20Mbps in the 2.4 GHz band.<br>Up to 56 kms for 10Mbps and 20Mbps with passive reflector on both sides in 2.4 GHz band. |
| <b>Transmitter Power</b>                        |  | ISM 2400 -2483.5 MHz 340mW<br>UNII 5250 -5350 MHz 200mW<br>UNII 5725 - 5825 MHz 200mW<br>ISM 5725 - 5850 MHz 200mW   |   |
| <b>DC Power</b>                                 | 24 VDC @ 0.3 Amp (active state)  | 24 VDC @ 0.3 Amp (active state)  | 24 VDC @ 0.3 Amp (active state)   |
| <b>Interface</b>                                | 10/100 Base T, half/full duplex<br>Rate auto negotiated (802.3 compliant)  | 10/100 Base T, half/full duplex<br>Rate auto negotiated (802.3 compliant)  | 10/100 Base T, half/full duplex<br>Rate auto negotiated (802.3 compliant)   |
| <b>Protocols Supported by CANOPY</b>            | Switched Layer 2 Transport with support for all common Ethernet protocols including IPV6, NetBIOS, DHCP, IPX, etc.   | Switched Layer 2 Transport with support for all common Ethernet protocols including IPV6, NetBIOS, DHCP, IPX, etc.   | Switched Layer 2 Transport with support for all common Ethernet protocols including IPV6, NetBIOS, DHCP, IPX, etc.  |
| <b>Protocols Used by CANOPY</b>                 | IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP  | IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP  | IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP   |
| <b>Software Upgrade Path</b>                    | Remotely downloaded into FLASH via RF link   | Remotely downloaded into FLASH via RF link   | Remotely downloaded into FLASH via RF link  |
| <b>Network Management</b>                       | HTTP, TELNET, FTP, SNMP  | HTTP, TELNET, FTP, SNMP  | HTTP, TELNET, FTP, SNMP   |
| <b>Wind</b>                                     | 190 km/hr (118 miles/hr)   | 190 km/hr (118 miles/hr)   | 190 km/hr (118 miles/hr)  |
| <b>Operating Temperature</b>                    | -40°C to +55°C (-40°F to +131°F)   | -40°C to +55°C (-40°F to +131°F)   | -40°C to +55°C (-40°F to +131°F)  |
| <b>Weight</b>                                   | 1 lb. (.45kg)  | 1 lb. (.45kg)  | 1 lb. (.45kg).<br>Weight with Passive Reflector (5.7 GHz only) 6.5 lbs. (3kg)   |
| <b>Dimensions</b>                               | 11.75" H x 3.4" W x 3.4"D<br>(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<br>(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<br>(29.9 cm H x 8.6 cm W x 8.6 cm D)  |

# Motorola Canopy™ Wireless Broadband System Specifications

| Canopy Cluster Management Module                                     | Cluster Management Module  | Cluster Management Module Micro   |
|--|--|---|
| <b>Limits or Conditions</b>  |  |   |
| Max cable length any one radio can be from Cluster Management Module | 328 feet (100 Meters)  | 328 feet (100 Meters)   |
| Max cable length from Cluster Management Module to GPS antenna       | 100 feet (30.5 Meters)   | NA  |
| Dimensions   | 17.00" H x 12.88" W x 6.50" D<br>(43.18 cm H x 32.72 cm W x 16.51 cm D)  | 12.00" H x 10.00" W x 3.00" D<br>(30.00 cm H x 25.00 cm W x 7.50 cm D)  |
| Weight   | 25.0 lbs. (11.3 kg)  | 81.0 lbs. (3.6 kg)  |
| Operating Temperature Overall  | -40°F to +131°F (-40°C to +55°C)<br>Meets CE IP44 according to EN60529:2000  |   |
| <b>Network Integration</b>   |  |   |
|  | Unmanged 8-port Ethernet switch  | Manged 8-port Ethernet switch include a web browser interface for satus, configuration, GPSS status and other web pages |
|  | Requires 2 cables per module—one provide Ethernet and power (RJ-45) and the other provides sync (RJ-11)  | one cable provides Ethernet, power & sync (RJ-45)   |
| <b>AC Power</b>  |  |   |
| <b>Limits or Conditions</b>  |  |   |
| AC input voltage   | 100 V – 240 V ~, 0.7 A – 0.35 A. Note: Applying 230 V to a unit, which is set to 115V, may damage the unit   |   |
| AC frequency   | 50Hz to 60Hz   |   |
| AC input power   | Nominal 66 watts, max 92 watts with 8 modules connected to the CMM at max cable length   |   |
| <b>24 VDC Power Supply</b>   |  |   |
| <b>Limits or Conditions</b>  |  |   |
| Input Voltage  | 17 to 32 VDC, measured at CMM  |   |
| Input Power  | Nominal 60 watts. Maximum 84 watts with 8 modules connected to the CMM at maximum cable length. 9 A in rush upon startup.  |   |
| Use Note   | If using a typical "24V +/-5%" power supply, ensure that CMM is within 400 cable feet (120M) of the power supply. Minimum 12 AWG copper wire.  | Required external 24V DC power supply. External power supply is not weatherised.  |
| <b>12 VDC Power Supply</b>   |  |   |
| <b>Limits or Conditions</b>  |  |   |
| Input Voltage  | 11.5 to 32 VDC, measured at CMM  | NA  |
| Use Note   | If using a 12 V power source (typically an automobile battery in a test or emergency situation), use 12 AWG (4mm <sup>2</sup> ) wire between the power supply and the CMM, ensure that the CMM is within 10 cable feet (3m) of the power supply, and ensure the modules are within 20 cable feet (6 m) of the CMM. | NA  |
| <b>Cable Specifications</b>  |  |   |
| <b>Limits or Conditions</b>  |  |   |
| Ethernet, GPS sync, and GPS coax Cables                              | The use of cables that conform to the operational temperature of the product, as well as being UV light protected, is mandatory.   |   |

# Motorola Canopy™ Wireless Broadband System Accessories\*

|                                  | PART NUMBER |
|----------------------------------|-------------|
| Reflector Hardware Kit           | RDN9720A    |
| Universal Mounting Bracket       | RDN9721A    |
| 110 VAC Single XCVR Power Supply | RDN9722A    |
| 220 VAC Single XCVR Power Supply | RDN9723A    |
| Ethernet Surge Suppressor        | RDH4208A    |
| Audio Alignment Headset          | RLN5635A    |
|                                  |             |

\* Not required for all configurations. See your Motorola representative to determine the solution that's right for your organization.

## CANOPY SURGE SUPPRESSOR

|                              |  |
|------------------------------|--|
| Dimensions                   | H 5.2" x W 5.0" x D 1.7" H<br>(H 132 mm x W 127 mm x D 43.2 mm)  |
| Space between mounting holes | 4.25" (108 mm)   |
| Size of knockouts            | .75" (19 mm)   |
| Weight                       | .4 lbs (180 g)   |
| Operating Temperature        | -40°C to +55°C (-40°F to 131°F)                                  |
| Internal Connectors          | RJ45   |
| Capacity                     | 1500J peak pulse energy dissipation with<br>10/10000 us waveform |



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