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United States	1-800-653-5350	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	+65-6796-9600
Australia	1-800-672-906	Australia/Stereich	1-505-5794-0
Denmark/Danmark	7020-1718	Finland/Suomi	9 5407 580
France	01-40-96-52-21	Germany/Deutschland	6074-49020
Italy/Italia	2-484441	Mexico/México	5-520-1835
Netherlands/Nederland	315-271700	Norway/Norge	+47 2232 4375
South Africa	11-8095311	Spain/España	91 324 40 00
Sweden/Sverige	84452900	Inside Spain	+34 91 324 40 00
Latin America	1-800-347-0178	Outside Spain	1-800-347-0178
Sales Support	+1-954-255-2610	Inside US	
Europe/Mid-East	Contact local distributor or call		
Distributor Operations	+44 118 945 7360		

Service Information
Before using the unit, it must be configured to operate in the facility's network and run your applications. If you have a problem running your unit or using your equipment, contact your facility's technical or Systems Support. If there is a problem with the equipment, they will contact the Symbol Support Center.

Technical Specifications

Physical Specifications

Dimensions	12 inches long x 8.25 inches wide x 3.5 inches thick
Housing	Aluminum
Weight	4 lbs.

Environmental Specifications

Temperature	-30°C to 55°C (Operating), -40°C to 85°C (Storage)
Humidity	5% to 95% Non-condensing (both Operating and Storage)
Altitude	8,000 feet/2438 m @28°C (Operating) 15,000 feet/4572 m @12°C (Storage)
Electrostatic Discharge	15kV (air) @ 50% rh, 8kV (contact) @ 50% r
Drop	Bench drop 36 inches to concrete
Wind Blown Rain	40 MPH @ 0.1inch/minute, 15 minutes
Rain/Drip/Spill	IPX6 Spray @ 4L/minute, 10 minutes
Dust	IP5X 20mb vacuum max, 2 hours, stirred dust, .88g/m³

Electrical Specifications

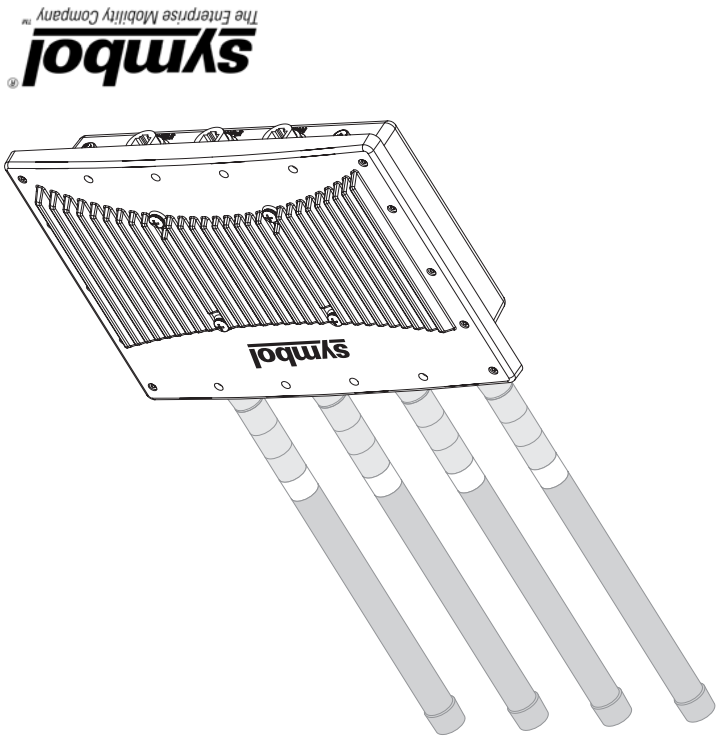
Operating Voltage	48Vdc (Nom)
Operating Current	200mA (Peak) @ 48Vdc/170mA (Nom) @ 48Vdc

Antenna Specifications

The AP-5181 2.4 GHz antenna suite includes the following models:

Part Number	Antenna Type	Nominal Net Gain (dBi)
ML-2499-FHPA5-01R	Omni-Directional	5.0
ML-2499-FHPA9-01R	Omni-Directional	9.0
ML-2452-PNA7-01R	Panel (Dual-Band)	8.0
ML-2452-PNA5-01R	Sector (Dual-Band)	6.0

Caution: The 2.4 and 5.5 GHz antenna models listed are rated for the AP-5181 model access point and its intended outdoor deployment. The models listed are not intended for use on an AP-5131 model access point.



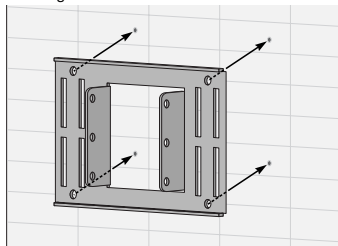
Installation Guide

AP-5181 Access Point

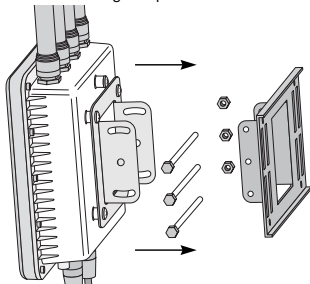
Note: The AP-5181 tilt angle may need to be adjusted during the antenna alignment process. Verify the antenna polarization angle when installing, and ensure the antennas are oriented correctly in respect to the AP-5181's coverage area.

Mounting the AP-5181 on a Wall

- Ensure the AP-5181 is oriented properly, and attach the bracket to a wall with flat side flush against the wall. Position the bracket in the intended location and mark the positions of the four mounting screw holes.



- Drill four holes in the wall that match the screws and wall plugs.
- Secure the bracket to the wall.
- Attach the square mounting plate to the AP-5181 with the supplied screws. Attach the AP-5181 to the plate on the wall.
- Secure the AP-5181 to the bracket. Fit the edges of the V-shaped clamp parts into the slots on the flat side of the rectangular plate.



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(1) This guide is intended for the technician responsible for installing the Symbol AP-5181 model access point. It assumes the technician is familiar with basic Ethernet LAN-based networking and device installation concepts. This guide provides specifications, procedures and guidelines to use during the installation process. This guide does not provide site-specific installation procedures. For detailed site-specific installation procedures, refer to the site-specific documentation derived from site survey and site network analysis.

Note - This AP-5181 Installation Guide is intended to assist installers with the installation of the AP-5181. Once secured in its intended operational position, refer to the *AP-51xx Product Reference Guide* for detailed instructions on configuring the access point's feature set. For more information, go to http://www.symbol.com/legacy_manuals/wire/accesspoints.html.

Verifying Package Contents
Inspect the contents and report any missing or damaged items to your sales representative.

The AP-5181 access point ships with the following components:

- 1 AP-5181 802.11 a+b/g dual-radio access point (AP-5181-13040-WWR)
- 1 AP-5181 802.11 a+b/g dual-radio access point (AP-5181-13040-WWR)
- 1 set of cable connectors
- 3 antenna connector dust covers
- 2 connector cover AP57 jacks, plus chain_LTW-M/9/14-SB
- 1 Waste Electrical and Equipment (WEEE) addendum

To mount the AP-5181 access point to a pole (1.5 - 18 inches in diameter) or wall, an AP-5181 Mounting Kit (Part No. KT-5181-WP-01R) can be separately ordered. This kit contains the brackets and accessories required to mount the access point.

Note: A RJ-45 to Serial (9-pin D) cable is required to make a connection to the AP-5181's Console port. This cable is not supplied and must be provided by the customer.

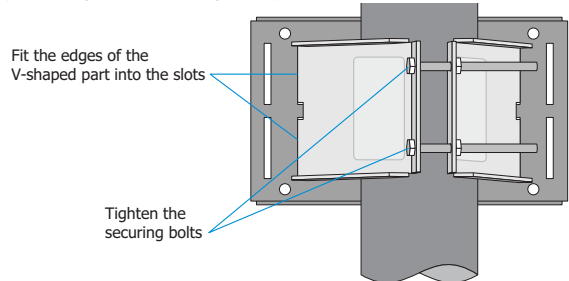
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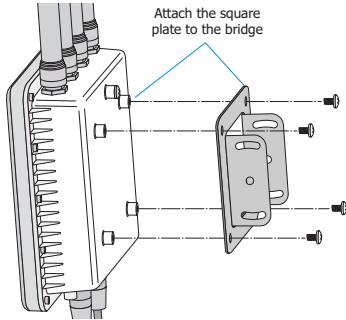
To the Installer
Before operating any equipment, review this document for any hazards associated with installation and use of the device. Also, review standard practices for preventing accidents. Only trained and qualified personnel should install and remove the Power Injector. The power cord must be a three-conductor type (two current carrying conductors and one ground conductor) terminated on one end by an IEC 60320 appliance coupler (for Power Injector connection) and on the other end by a plug containing a ground (earth) contact. The power cord must be rated for a minimum of 250VAC RMS operation, with a minimum rated current capacity of 5A (or a minimum wire gauge of 18AWG (0.75mm²)). The AC wall-socket outlet must be near the Power Injector and easily accessible. The Power Injector interfaces are qualified as SELV (Safety Extra-Low Voltage) circuits according to IEC 60950. These interfaces can only be connected to SELV interfaces on other equipment.

Mounting the AP-5181 on a Pole

- Ensure the AP-5181 is oriented properly, and fit the edges of the V-shaped clamp parts into the slots on the flat side of the rectangular plate.
- Place the V-shaped bracket clamp parts around the pole and tighten the nuts just enough to hold the bracket to the pole. (The bracket may need to be rotated around the pole during the antenna alignment process).



- Attach the square mounting plate to the access point with the supplied screws.



- Attach the AP-5181 and mounting plate to the bracket already fixed to the pole. If necessary, use the "U-bracket" (included in the mounting kit), in conjunction with the band clamp, to expand the diameter of the bracket to a maximum of 18 inches.
- Secure the AP-5181 to the pole.

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(2) If using a single-port Power-Over-Ethernet solution to supply power to the AP-5181, Symbol recommends using the AP-5181 Power Tap (Part No. AP-PSBAS-5181-01R). This single-port power injector is designed specifically for outdoor use with the AP-5181. If installing the AP-5181 in an outdoor area prone to high winds and rain, Symbol recommends using the AP-5181 Heavy Weather Kit (Part No. KT-5181-HW-01R). This kit affords additional protection to shield an AP-5181 from high wind and water damage as a result of driving rain.

Only RJ-45 data connectors should be connected to these sockets.

- The Power Injector **Data In** and **Data & Power Out** ports are shielded RJ-45 sockets.
- A voltage mismatch can cause equipment damage and could pose a fire hazard. If the international) is used on the phase conductor.
- Ensure a fuse or circuit breaker no larger than 120 VAC, 3A U.S. (240VAC, 1.5A
- This product relies on the building installation for short-circuit (over current) protection. power source.
- Follow basic electricity safety measures whenever connecting the Power Injector to its power source.
- Read the installation instructions before connecting the Power Injector to a

Warnings

- Only trained and qualified personnel should install and remove the Power Injector. The power cord must be a three-conductor type (two current carrying conductors and one ground conductor) terminated on one end by an IEC 60320 appliance coupler (for Power Injector connection) and on the other end by a plug containing a ground (earth) contact. The power cord must be rated for a minimum of 250VAC RMS operation, with a minimum rated current capacity of 5A (or a minimum wire gauge of 18AWG (0.75mm²)). The AC wall-socket outlet must be near the Power Injector and easily accessible. The Power Injector interfaces are qualified as SELV (Safety Extra-Low Voltage) circuits according to IEC 60950. These interfaces can only be connected to SELV interfaces on other equipment.

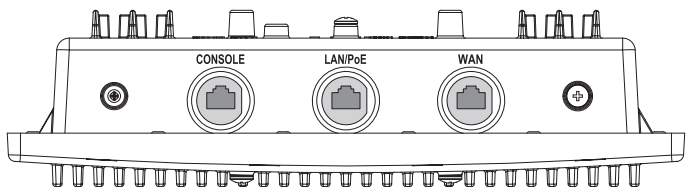
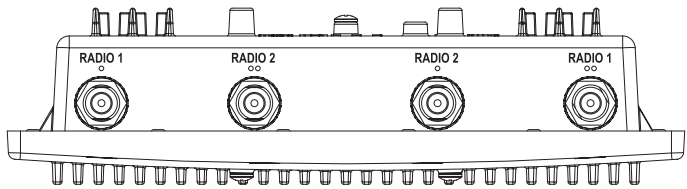
Safety Information
Before operating any equipment, review this document for any hazards associated with installation and use of the device. Also, review standard practices for preventing accidents.

Introduction

The AP-5181 is a ruggedized access point designed for outdoor deployments. The AP-5181 employs a dual-mode simultaneous 802.11a and 802.11g radio solution. Unlike the AP-5131 model access point, there is just the one dual-radio mechanical version of the AP-5181 (no single radio model is available).

Product Description

The AP-5181 has a separate LAN and WAN port for connecting to the network and receiving 802.3af power (over the AP-5181's LAN port only). The AP-5181 has four antenna connectors (on top) supporting 802.11a and 802.11g antenna options. However, the AP-5181 antenna suite is designed for outdoor deployments, so the existing AP-5131 antenna suite should not be used with an AP-5181. The AP-5181's mode of operation is identical to the AP-5131's.



Mounting the AP-5181

The AP-5181 can be mounted to a pole (1.5 - 18 inches in diameter) or to a wall. The AP-5181 Wall Mounting Kit (Part No. KT-5181-WP-01R) is not included with AP-5181 and must be ordered separately.

The mounting bracket has four parts. One rectangular plate used for pole and wall mounting, one square plate that attaches directly to the AP-5181 and two plates forming an adjustable V-shaped clamp for pole mounting.

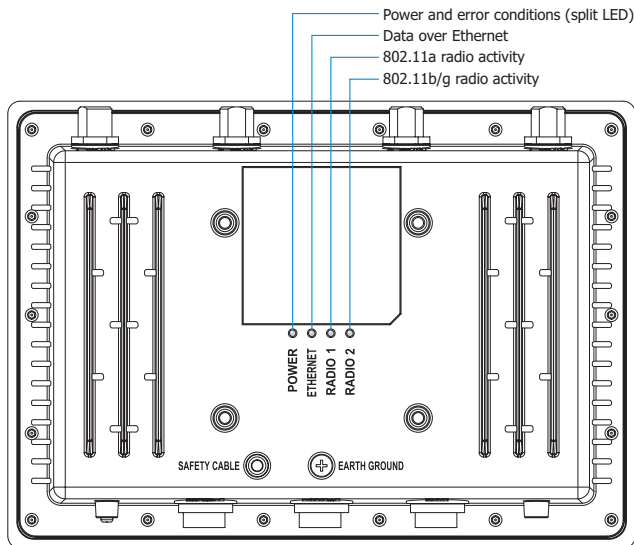
(3)

The AP-5181 5.2 GHz antenna suite includes the following models:

<i>Part Number</i>	<i>Antenna Type</i>	<i>Nominal Net Gain (dBi)</i>
ML-5299-FHPA6-01R	Omni-Directional	6.0
ML-5299-FHPA10-01R	Omni-Directional	10.0
ML-2452-PNA7-01R	Panel (Dual-Band)	8.0
ML-2452-PNA5-01R	Sector (Dual-Band)	6.0

AP-5181 LEDs

The AP-5181 access point has four LEDs matching the functionality of the AP-5131 model access point. However, the AP-5181's LEDs are on the bottom of the access point.



The AP-5181's LEDs have the following display and functionality:

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Power Status - Solid **white** indicates the AP-5181 is adequately powered.

Error Conditions - Solid **red** indicates the AP-5181 has a problem requiring attention.

Ethernet Activity - Flashing **white** indicates data transfers and Ethernet activity.

802.11a Activity - Flickering **amber** indicates beacons and data transfers over the radio.

802.11b/g Activity - Flickering **green** indicates beacons and data transfers over the radio.

Symbol Power Injector Solutions

An AP-5181 access point receives power via an Ethernet cable connected to the AP-5181's LAN port (using the 802.3af standard).

When users purchase a Symbol WLAN solution, they often need to place access points in obscure locations. In the past, a dedicated power source was required for each access point in addition to the Ethernet infrastructure. This often required an electrical contractor to install power drops at each access point location. An approved 802.3af solution merges power and Ethernet into one cable, reducing the burden of installation and allows optimal access point placement in respect to the intended radio coverage area.

An AP-5181 model access point can use one of two approved Symbol single-port solutions. Both the Symbol Power Tap (Part No. AP-PSBIAS-5181-01R) and Symbol Power Injector (Part No. AP-PSBIAS-1P2-AFR) are integrated AC-DC converters and 802.3af Power Injectors using 110-220V AC power to combine low-voltage DC with Ethernet data in a single cable connecting to the AP-5181's LAN port. The Symbol Power Tap is a ruggedized solution (designed for outdoor deployments), and may be better suited for an AP-5181 installation prone to wind and rain. A Power Injector (Part No. AP-PSBIAS-1P2-AFR) can only be used for indoor installations. A Power Injector or Power Tap receives power and is ready for AP-5181 connection and operation as soon as AC power is applied. There is no On/Off switch.

Caution - The AP-5181 supports any standards-based 802.3af compliant power source (including non-Symbol power sources). However, using the wrong solution (including a non-compliant POE system or a solution not rated for outdoor use) could severely damage the AP-5181 and void the product warranty.

Caution - For Power Tap installations, an electrician is required to open the unit, feed the power cable through the Line AC connector, secure the power cable to the unit's three screw termination block and tighten the unit's Line AC clamp (by hand) to secure the power cable. Only a certified electrician should conduct the installation. Additionally, an electrician must attach a ground cable between the EARTH GROUND connector (on the back of the unit) to a suitable earth ground connection as defined by your local electrical code.

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Customer Support

Symbol Technologies provides its customers with prompt and accurate customer support. Use the Symbol Support Center as the primary contact for any technical problem, question or support issue involving Symbol products. If the Symbol Customer Support specialists cannot solve a problem, access to all technical disciplines within Symbol becomes available for further assistance and support. Symbol Customer Support responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements.

When contacting Symbol Customer Support, please provide the following information:

- Serial number of unit
- Model number or product name
- Software type and version number

North American Contacts

Inside North America, contact Symbol at:

For sales and product information:

Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, New York 11742-1300
Telephone: 1-631-738-2400/1-800-SCAN 234
Fax: 1-631-738-5990

For product support and service:

Symbol Global Support Center:
Telephone: 1-800-653-5350, +1-631-738-6213 (Outside North America)
Fax: 631-563-5410
Email: support@symbol.com

Or see the Symbol Web for additional local contact numbers

<http://www.symbol.com/services/contactsupport>

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International Contacts

Outside North America, contact Symbol at:
Symbol Technologies, Inc.
Symbol Place
Winnersh Triangle, Berkshire, RG41 5TP
United Kingdom
Telephone: 0800-328-2424 (Inside UK), +44 118 945 7529 (Outside UK)

Web Support Sites

Comprehensive On-line support is available at the MySymbolCare Web-site. Registration is free and a variety of services can be linked through this Web-portal.

MySymbolCare - RMA repair requests

<http://www.symbol.com/services/msc/msc.html>

Symbol Services Homepage

<http://www.symbol.com/services/>

Symbol Developer Program Web Site

<http://devzone.symbol.com/>

Additional Information

Obtain additional information by contacting Symbol at:

- 1-800-722-6234, inside North America
- +1-631-738-5200, in/outside North America
- <http://www.symbol.com/>

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Regulatory Information

All Symbol devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required. Any changes or modifications to Symbol Technologies equipment, not expressly approved by Symbol Technologies, could void the user's authority to operate the equipment.

When Symbol devices are professionally installed, the Radio Frequency Output Power will not exceed the maximum allowable limit for the country of operation.

Antennas: Use only an approved replacement. Unauthorized antennas, modifications, or attachments could cause damage and may violate regulations.

This guide is available in local languages, translations can be downloaded from the following Website: <http://www.symbol.com/services/manuals/>.

Country Approvals

Regulatory markings are applied to the device signifying the radio (s) are approved for use in the following countries: United States, Canada and Europe (see Note 1).

Please refer to the Symbol Declaration of Conformity (DoC) for details of other country markings. This is available at <http://www2.symbol.com/doc/>.

Note 1: For 2.4GHz Products: Europe includes, Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Operation of the device without regulatory approval is illegal.



Health and Safety Recommendations

Warnings for the use of Wireless Devices

Please observe all warning notices with regard to the usage of wireless devices.

Potentially Hazardous Atmospheres

You are reminded to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders) and any other area where you would normally be advised to turn off your vehicle engine.

(11)



Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. When installed adjacent to other equipment, it is advised to verify that the adjacent equipment is not adversely affected.

FCC / EU RF Exposure Guidelines

Safety Information

The device complies with internationally recognised standards covering human exposure to electromagnetic fields from radio devices.

Reducing RF Exposure—Use Properly

It is advisable to use the device only in the normal operating position as described in this guide.

Remote and Standalone Antenna Configurations

To comply with FCC RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop of similar configurations must operate with a minimum separation distance of 20 cm from all persons.

Power Supply

This device is powered from a 802.3af compliant power source which is certified by the appropriate agencies.

Wireless Devices - Countries

Country Selection

Select only the country in which you are using the device. Any other selection will make the operation of this device illegal.

Operation in the US

The use on UNII (Unlicensed National Information Infrastructure) Band 1 5150-5250 MHz is restricted to indoor use only, any other use will make the operation of this device illegal.

The available channels for 802.11 b/g operation in the US are Channels 1 to 11. The range of channels is limited by firmware.

(12)

Radio Frequency Interference Requirements—FCC



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and

used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Radio Transmitters (Part 15)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio Frequency Interference Requirements – Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Radio Transmitters

This device complies with RSS 210 of Industry & Science Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication.

(13)

This device has been designed to operate with the antennas listed in this guide, and have a maximum gain of 9dBi (2.4GHz) and 10dBi (5GHz). Antennas not included in this list or having a gain greater than 9dBi (2.4GHz) and 10dBi (5GHz) are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Label Marking: The Term "IC:" before the radio certification signifies that Industry Canada technical specifications were met.



CE Marking and European Economic Area (EEA)

The use of 2.4GHz RLAN's, for use through the EEA, have the following restrictions:

- Maximum radiated transmit power of 100 mW EIRP in the frequency range 2.400 -2.4835 GHz.
- France outside usage, the equipment is restricted to 2.400-2.45 GHz frequency range.
- Italy requires a user license for outside usage.

Statement of Compliance

Symbol Technologies, Inc., hereby, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A Declaration of Conformity may be obtained from <http://www2.symbol.com/doc/>.

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