

Installing the ExtremeWiNG AP7662i/AP7662 Access Point

Overview of the AP7662i/AP7662

The AP7662 is an IP67 rated Access Point with 802.11ac dual band 2:2 radios. The AP7662 is easy to install, lightweight, and is available in an internal (AP7662i) and external (AP7662) antenna model. Each model includes 802.11 radios, an IoT radio, and a GPS radio. The AP7662 model comes in two models: AP7662i and AP7662. In this document, the functionality, feature, and the procedure applies to both the models when AP7662i/AP7662 is used.

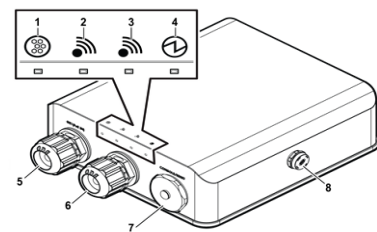
Note: The AP7662i/AP7662 requires a minimum base firmware of WiNG 5.9.1.

The AP7662i/AP7662 model has the following features:

- Radios: 2 radios (2.4GHz and 5GHz); 1 IoT/BLE/802.15.4 Radio (2.4 GHz)
- Console Port: RJ45
- One RJ45, 10/100/1000Mb Ethernet Port (GE1) with PoE
- One RJ45, 10/100/1000Mb Ethernet port (GE2)
- IP67 Connectors on all ports
- LEDs: 4 (see Figure 1)
- One Reset button
- Power: PoE 802.3af or 802.3at
- GPS Receiver (will be supported via a future firmware release)
- Antennas:
 - AP7662i - Five **internal** antennas (four band locked antennas and one BLE antenna)
 - AP7662- Five **external** antennas (four single band antennas and one BLE antenna)
- Temperature:
 - AP7662i/AP7662 -40°C to +70°C (-40°F to 158°F) without solar radiation; -40°C to +60°C (-40°F to 140°F) with solar radiation
- Enclosure: Cast Aluminum base and Top

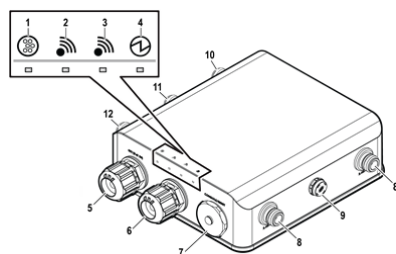
In Figure 1, the top image indicates AP7662i. Figure 2 shows the top and side views of AP7662.

Figure 1 Top and Side Views of AP7662i



1	IoT/BLE Radio
2	Radio - 5 GHz
3	Radio - 2.4 GHz
4	Status
5	GE1 (PoE IN)
6	GE2
7	Console/Reset
8	Vent

Figure 2 Top and Side Views of AP7662



1	IoT/BLE Radio
2	Radio - 5 GHz
3	Radio - 2.4 GHz
4	Status
5	GE1 (PoE IN)
6	GE2

7	Console/Reset
8	2.4 G - Antenna 1 and 2
9	Vent
10	5G - Antenna 1
11	BLE/802.15.4 Antenna
12	5 G - Antenna 2

LEDs on the Front of the AP

Amber LEDs indicate 5 GHz Wi-Fi Radio, Green LEDs indicate 2.4 GHz Wi-Fi Radio, and Blue LED indicates the IoT Radio. The Status LED is ON only during bootup.

For detailed installation information about the AP7662i/AP7662, see the *ExtremeWireless AP7662i/AP7662 Installation Guide*.

Table 1 shows ways to power the AP7662i/AP7662.

Table 1 Powering the AP7662i/AP7662

Power Source	Description
Power over Ethernet	Power is provided through the RJ45 Ethernet port (GE1 port). (PoE)

Verifying the AP7662i/AP7662 Box Contents

Verify the contents of the box and ensure that the following items are available:

Table 2 Contents of the AP7662i/AP7662 Box

Quantity	Item
1	AP7662i/AP7662 Quick Reference Guide
1	Cloud Quick Start Card

The following hardware is included:

1	M4 screw assembly with star washer
1	Ring terminal

Mounting and Connecting the AP

Electrical Hazard: Only qualified personnel should perform installation procedures.

Use these instructions as guidelines for mounting and connecting the AP7662i/AP7662 easily and safely.

The AP7662i/AP7662 mounting brackets are sold separately.

For more information about installing the optional bracket and the adapter, see the *ExtremeWireless AP7662i/AP7662 Installation Guide*.

For installation videos of the AP, see www.extremenetworks.com/support/

Mounting the AP7662i/AP7662

Use these instructions as guidelines for mounting and connecting the AP7662i/AP7662 easily and safely. The installation of the AP7662i/AP7662 should be performed by a professional installer to ensure proper operation and compliance with local safety guidelines.

Attach the AP7662i/AP7662 to a surface that can support the AP and in an environment it can withstand. It can be mounted to a wall, girder, ceiling, or pole, and the surface material can be concrete, brick, wood, metal, or plastic.

Positioning the AP for Installation

Mount the AP so that the glands are on the side of the AP closest to the ground, and not above the plastic cover. You must provide a 3-inch drip loop on all cables.

Note: Do not remove the dust cap until you need to install the BLE/IoT antennas.

Attach the Ground Wire

Use the M4 ground screw assembly, with the star washer, to attach the ground wire's ring terminal to the back of the AP. The wire should be as close to the AP bottom as possible. Tighten the screw to a torque of 13.0-13.5 in-lbs.

Note: Attach the H bracket after attaching the ground wire onto the AP. Tighten the torque, tighten the screws, and attach the LAN cable.

Mounting the AP7662i/AP7662 to a Wall

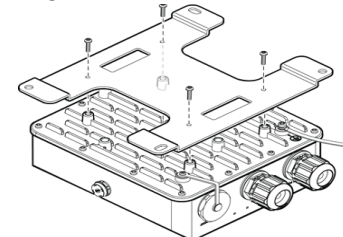
Note: The "H" type Mounting Bracket (WS-MBO-H01) is sold as a separate accessory (ordering part #30519).

- 1 Using the mounting bracket as a guide, mark the location for the mounting screws. The wall bracket provides eight attachment holes. Use

four (one in each corner). Place the bracket and mark the four hole centers.

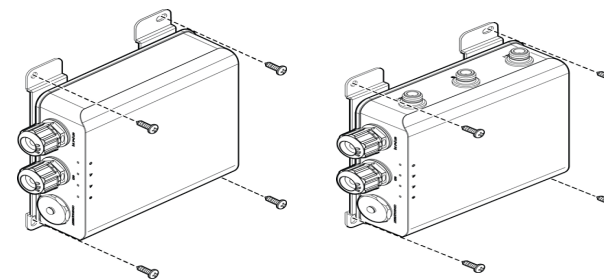
- 2 Drill four holes into the wall as follows:
 - for installing the AP on a masonry wall, use a 5/16" diameter bit.
 - for other materials, use the appropriate drill for the screws being used.
- 3 For masonry installations, drill at least 1/8" (3mm) past the depth of the screw, or bolt, being used, and place four anchor assemblies into the holes.
- 4 Attach the AP to the "H" Bracket:
 - a Use four M4 screw assemblies to attach the AP to the "H" bracket on the side that does *not* have the PEM stand-offs.
 - b Tighten the four screws to a torque of 13.0-13.5 in-lbs.

Figure 3 Attaching the "H" Bracket to the AP



- 5 Secure the anchors to the wall, then secure the bracket to the anchors.
- 6 If using #10 screws, tighten them to a torque of 25 in-lbs. If using ¼" screws, tighten them to 45 in-lbs.

Figure 4 AP7662i and AP7662 Wall Mount "H" Bracket



Mounting the AP7662i/AP7662 to a Pole

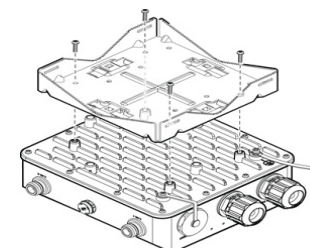
Note: The Pole Mounting Bracket (WS-MBO-POLE01) is sold as a separate accessory (ordering part #30520).

- 1 Determine the diameter of the pole.

Pole Diameter	Cable Clamp Size
<= 2.5" (63.5mm)	Use small cable clamp.
5" - 7" (127mm)	Use large cable clamp

- For other pole diameters, provide your own stainless steel cable clamp. The band must be ½" (12.7mm) wide.
- 2 Attach the AP to the "Pole Mount" bracket using 4 M4 screws. Tighten the four screws to a torque of 13.0-13.5 in-lbs.

Figure 5 Attaching a Pole Bracket to the AP

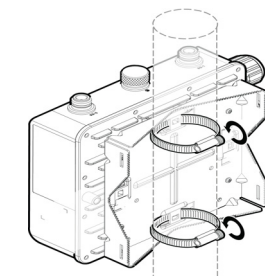


- 3 Attach the cable clamp to the pole bracket. Open the cable clamp by turning a flat bladed screwdriver counterclockwise. Then, insert the non-clamp end into the pole bracket through the holes.

Note: It is easier to install both clamps before attaching to the pole.

- 4 Put the metal band around the pole and insert it into the clamp. Turn the clamp screw clockwise, tightening the band around the pole.

Figure 6 AP with Mounting Bracket—Vertical Pole



Mounting the AP7662i/AP7662 to a Wall/Pole using the WS-MBO-ART01 2 Axis Extension Arm

You can mount the AP7662i/AP7662 to a wall or a pole using a 10" extension arm (WS-MBO-ART01, ordering part #30514). For mounting and installation instructions, refer to the *ExtremeWireless AP7662i/AP7662 Installation Guide*.

Installing External Antennas

- 1 Professionally install the external antennas intended for area coverage. For information about antenna selection and installation, refer to the *External Antenna Site Preparation and Installation Guide*.
- 2 Attach the external antenna cables to the Standard Polarity Type-N connectors on the AP7662i/AP7662.

Connecting a Power Supply to the AP7662i/AP7662

If you need to power the AP7662i/AP7662, you can do so by using the GE1 port on the AP. The power LED on the front face of the AP illuminates when the device is powered on. Refer to the *ExtremeWireless AP7662i/AP7662 Installation Guide* for more information.

LAN/Console Connections

The AP7662i/AP7662 has two LAN (Ethernet) ports and a Console port. Refer to Figure 1 and Figure 2 for the location of these ports. During administration and maintenance through the LAN or Console, the AP must still have a power connection through either an Ethernet PoE cable or a DC power supply.

Regulatory and Compliance Information Safety Guidelines

This section contains notices that are intended to protect your personal safety and prevent damage to the equipment.

Qualified Personnel:

Electrical Hazard: Only qualified personnel should perform installation procedures. Within the context of the safety notes in this documentation, qualified persons are defined as persons who are authorized to commission, ground and label devices, systems, and circuits in accordance with established safety practices and standards. A qualified person understands the requirements and risks involved with installing electrical equipment in accordance with national codes.

Federal Communications Commission (FCC) Notice

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 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 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.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Warning: FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm for AP7662i and 35 cm for AP7662 between the radiator & your body.

ExtremeWiNG™ Access Points

Quick Reference

P/N 37121 AP-7662-680B30-US

P/N 37122 AP-7662-680B30-WR

P/N 37123 AP-7662-680B40-US

P/N 37124 AP-7662-680B40-WR

Professional Installation Instruction

Installation personnel

This product is designed for specific application and needs to be installed by a qualified personnel who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

Installation location

The product shall be installed at a location where the radiating antenna can be kept 20 cm for AP7662i and 35 cm for AP7662 (FCC) and 20 cm for AP7662i and 42 cm for AP7662 (ISED) from nearby person in normal operation condition to meet regulatory RF exposure requirement.

External antenna

Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/ISED limit and is prohibited.

Installation procedure

Please refer to user's manual for the detail.

Warning: Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.

Instructions d'installation professionnelle

Installation

Ce produit est destiné a un usage spécifique et doit être installé par un personnel qualifié maîtrisant les radiofréquences et les règles s'y rapportant. L'installation et les réglages ne doivent pas être modifiés par l'utilisateur final.

Emplacement d'installation

En usage normal, afin de respecter les exigences réglementaires concernant l'exposition aux radiofréquences, ce produit doit être installé de façon a respecter une distance de 20cm pour AP7662i et 35 cm pour AP7662 (FCC) et 20 cm pour AP7662i et 42 cm pour AP7662 (ISED) entre l'antenne émettrice et les personnes.

Antenn externe

Utiliser uniquement les antennes approuvées par le fabricant. L'utilisation d'autres antennes peut conduire a un niveau de rayonnement essentiel ou non essentiel dépassant les niveaux limites définis par ISED, ce qui est interdit.

Procedure d'installation

Consulter le manuel d'utilisation.

Warning: Avertissement: Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne dépasse pas les limites en vigueur. La violation de cette règle peut conduire a de sérieuses pénalités fédérales.

Notice

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For product support, including documentation, visit:

www.extremenetworks.com/support/

Declaration of Conformity in Languages of the European Community

English Hereby, Extreme Networks, declares that this Radio LAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Finnish Valmistaja Extreme Networks vakuuttaa täten että Radio LAN device tyypininen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Dutch Hierbij verklaart Extreme Networks dat het toestel Radio LAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Bij deze verklaart Extreme Networks dat deze Radio LAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.

French Par la présente Extreme Networks déclare que l'appareil Radio LAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Par la présente, Extreme Networks déclare que ce Radio LAN device est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.

Swedish Härmed intygar Extreme Networks att denna Radio LAN device står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Danish Undertegnede Extreme Networks erklærer herved, at følgende udstyr Radio LAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

German Hiermit erklårt Extreme Networks die Übereinstimmung des "WLAN Wireless Controller bzw. Access Points" mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.

Greek ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Extreme Networks ΔΗΛΩΝΕΙ ΟΤΙ Radio LAN device ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Icelandic Extreme Networks lýsir her með yfir að thessi bunadur, Radio LAN device, uppfyllir allar grunnkröfur, sem gerðar eru í R&TTE tilskipun ESB nr 1999/5/EC.

Italian Con la presente Extreme Networks dichiara che questo Radio LAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Spanish Por medio de la presente Extreme Networks declara que el Radio LAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Portuguese Extreme Networks declara que este Radio LAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Malti Hawnhekk, Extreme Networks, jiddikjara li dan Radio LAN device jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohranj relevanti li hemm fid-Dirrettiva 1999/5/EC.

European Waste Electrical and Electronic Equipment (WEEE) Notice



In accordance with Directive 2012/19/EU of the European Parliament on waste electrical and electronic equipment (WEEE):

- The symbol above indicates that separate collection of electrical and electronic equipment is required.
- When this product has reached the end of its serviceable life, it cannot be disposed of as unsorted municipal waste. It must be collected and treated separately.
- It has been determined by the European Parliament that there are potential negative effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment.
- It is the users' responsibility to utilize the available collection system to ensure WEEE is properly treated.

For information about the available collection system, please contact Extreme Environmental Compliance at Green@extremenetworks.com.

Hazardous Substances

This product complies with the requirements of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

NCC Statement

低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

- 「電磁波曝露量MPE標準值1mW/cm²，送測產品實測值為0.359mW/cm²」
- 使用此產品時應避免影響附近雷達系統之操作。
- 隱私權警語標示：「為維護隱私權，請妥適使用」。
- 本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者。

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- 「電磁波曝露量MPE標準值1mW/cm²，本產品使用時建議應距離人體 35cm」
- 此器材須經專業安裝並限用於固定式點對點操作。
- 高增益指向性天線只得應用於固定式點對點系統。
- 使用此產品時應避免影響附近雷達系統之操作。
- 本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者。
- 隱私權警語標示：「為維護隱私權，請妥適使用」。

Other Countries

Brazil

Este produto está homologado pela ANATEL, de acordo com os procedimentos regulamentados pela Resolução nº. 242/2000 e atende aos requisitos técnicos aplicados.

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL – www.anatel.gov.br

Industry Canada Notice

This device complies with ISED's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Caution :

- The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
- Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Avertissement:

- les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Warning: IC Radiation Exposure Statement: This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm for AP7662i and 42 cm for AP7662 between the radiator & your body.

Warning: Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm pour AP7662i et 42 cm pour AP7662 de distance entre la source de rayonnement et votre corps.

产品说明书附件 Supplement to Product Instructions						
部件名称 (Parts)	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBBs)	多溴二苯醚 (PBDEs)
金属零件 (Metal Parts)	×	○	○	×	○	○
电源模块 (Power Module)	×	○	○	×	○	○
电缆及电缆组件 (Cables & Cable Assemblies)	×	○	○	×	○	○
塑料和聚合物零件 (Plastic and Polymer parts)	○	○	○	○	○	×
电源开关 (Power Button)	○	○	×	×	○	○
○：表示该含有害物质在全部材料中的含量符合 SJ/T 11363-2006 标准规定的限量要求以下。 Indicates that the concentration of the hazardous substance in all homogeneous materials in the part is below the relevant threshold of the SJ/T 11363-2006 standard.						
×：表示该含有害物质至少在部件的某一均质材料中的含量超过 SJ/T 11363-2006 标准规定的限量要求。 Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T 11363-2006 standard.						
附册之目的所有产品, 未表显示。 取得详细情况, 可在产品可能包含这些物质。注意: 在所有产品中可能会可能不会含有所列的零件。 This table shows where these substances may be found in the supply chain of Extreme electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.						
除非另外特别标注, 此标志为针对所有产品及产品的环保使用期标志。某些零部件会有一个不同的环保使用期(例如: 电源开关按钮)在其产品上。 此环保使用期只适用于产品在产品手册中所规定的条件下工作。 The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shows here, unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.						

This radio transmitter (IC: 4141B-AP3917E/ Model: AP3917e & AP7662) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 4141B-AP3917E/ Model: AP3917e & AP7662) a été approuvé par ISED pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Item	Function	Antenna Type	Part No	Connector	Gain (dBi)		
					2.4G	4.9G	5G
1	WLAN	Dipole	ML-2452-HPAG5A8-01	N Male	5	7.5	8
2	WLAN	Dipole	ML-2452-HPAG4A6-01	N Male	4		7.3
3	WLAN	Dipole	ML-2452-HPA6X6-036	N Male	4		6
4	WLAN	Dipole	WS-AO-DQ04360N	4 N Male	5.5		6
5	WLAN	Dipole	ML-2499-HPA4-01	N Male	4.5		
6	WLAN	Dipole	ML-2452-HPA6-01	N Male	5.3	4.6	6.1
7	WLAN	Dipole	ML-5299-HPA5-01	N Male			5.6
8	WLAN & BT LE & Zigbee	Dipole	ML-2499-HPA8-01	N Male	8		
9	WLAN	Dipole	ML-2499-FHPA5-01R	N Male	7.7		
10	WLAN	Dipole	ML-5299-FHPA6-01R	N Male		8.25	8.25
11	WLAN	Panel	ML-2452-PNA5-01R	N Male	4.5	5	5-4.5 MAX:5
12	WLAN & BT LE & Zigbee	Panel	ML-2452-PNA7-01R	N Male	7.8	7	10.7-7 MAX:10.7
13	WLAN	Polarized Panel	ML-2452-PNL6M4-N36	4 N Male	5.6	6.7	6.7
14	WLAN	Polarized Panel	ML-2452-SEC6M4-N36	4 N Male	6.92		7.23
15	WLAN	Polarized Panel	ML-2452-SEC6M4-N30	4 N Male	5.5		6
16	WLAN	Polarized Panel	ML-2452-PNL9M3-N36	N Male	11	7.3	10.7

4.9G Antenna for Item 6 and Item 11 will be secondary primary permanent fixed operations use only.