Intel® WiFi Adapter Information Guide

This version of Intel® PROSet/Wireless WiFi Software is compatible with the adapters listed below. Note that newer features provided in this software are generally not supported on older generations of wireless adapters.

The following adapters are supported in Windows* 10:

- Intel® Wi-Fi 6E AX211
- Intel® Wi-Fi 6E AX210
- Intel® Wi-Fi 6 AX203
- Intel® Wi-Fi 6 AX201
- Intel® Wi-Fi 6 AX200
- Intel® Wi-Fi 6 AX101

With your WiFi network card, you can access WiFi networks, share files or printers, or even share your Internet connection. All these features can be explored using a WiFi network in your home or office. This WiFi network solution is designed for both home and business use. Additional users and features can be added as your networking needs grow and change.

This guide contains basic information about Intel adapters. Intel® wireless adapters enable fast connectivity without wires for desktop and notebook PCs.

Depending on the model of your Intel WiFi adapter, your adapter is compatible with 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac and 802.11ax wireless standards. Operating at 2.4GHz, 5GHz or 6GHz frequency, you can now connect your computer to existing high-speed networks that use multiple access points within large or small environments. Your WiFi adapter maintains automatic data rate control according to the access point location and signal strength to achieve the fastest possible connection.

Information in this document is subject to change without notice.

Intel Corporation assumes no responsibility for errors or omissions in this document. Nor does Intel make any commitment to update the information contained herein.

IMPORTANT NOTICE FOR ALL USERS OR DISTRIBUTORS:

Intel wireless LAN adapters are engineered, manufactured, tested, and quality checked to ensure that they meet all necessary local and governmental regulatory agency requirements for the regions that they are designated and/or marked to ship into. Because wireless LANs are generally unlicensed devices that share spectrum with radars, satellites, and other licensed and unlicensed devices, it is sometimes necessary to dynamically detect, avoid, and limit usage to avoid interference with these devices. In many instances Intel is required to provide test data to prove regional and local compliance to regional and governmental regulations before certification or approval to use the product is granted. Intel's wireless LAN's EEPROM, firmware, and software driver are designed to carefully control

parameters that affect radio operation and to ensure electromagnetic compliance (EMC). These parameters include, without limitation, RF power, spectrum usage, channel scanning, and human exposure.

For these reasons Intel cannot permit any manipulation by third parties of the software provided in binary format with the wireless LAN adapters (e.g., the EEPROM and firmware). Furthermore, if you use any patches, utilities, or code with the Intel wireless LAN adapters that have been manipulated by an unauthorized party (i.e., patches, utilities, or code (including open source code modifications) which have not been validated by Intel), (i) you will be solely responsible for ensuring the regulatory compliance of the products, (ii) Intel will bear no liability, under any theory of liability for any issues associated with the modified products, including without limitation, claims under the warranty and/or issues arising from regulatory non-compliance, and (iii) Intel will not provide or be required to assist in providing support to any third parties for such modified products.

Regulatory Information

This section provides regulatory information for the following wireless adapters:

Intel® Wi-Fi 6 AX200
Intel® Wi-Fi 6 AX201
Intel® Wi-Fi 6 AX203
Intel® Wi-Fi 6E AX210
Intel® Wi-Fi 6E AX211

Intel® Wi-Fi 6E AX101

NOTE: In this section, all references to the "wireless adapter" refer to all adapters listed above.

The following information is provided:

Information for the User
Regulatory Information
Regulatory ID
Information for OEMs and Host Integrators

NOTE: Due to the evolving state of regulations and standards in the wireless LAN field (IEEE 802.11 and similar standards), the information provided herein is subject to change. Intel Corporation assumes no responsibility for errors or omissions in this document.

INFORMATION FOR THE USER

Explosive Device Proximity Warning

Warning: Do not operate a portable transmitter (including this wireless adapter) near unshielded blasting caps or in an explosive environment unless the transmitter has been modified to be qualified for such use

Warning: The wireless adapter is not designed for use with high-gain directional antennas.

Use On Aircraft Caution

Caution: Regulations of commercial airline operators may prohibit airborne operation of certain electronic devices equipped with radio frequency devices (wireless adapters) because their signals could interfere with critical aircraft instruments.

Caution: This device is prohibited against use for the control of or communications with unmanned aircraft systems, including drones

Safety Approval Considerations

This device has been safety approved as a component and is for use only in complete equipment where the acceptability of the combination is determined by the appropriate safety agencies. When installed, consideration must be given to the following:

- The use of wireless adapters in hazardous locations is limited by the constraints posed by the safety directors of such environments.
- The use of wireless adapters on airplanes is governed by the Federal Aviation Administration (FAA).
- The use of wireless adapters in hospitals is restricted to the limits set forth by each hospital.

USA FCC Radio Frequency Exposure

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The wireless adapter meets the Human Exposure requirements found in FCC Part 2, 15C, 15E along with guidance from KDB 447498, KDB 248227, KDB 616217 and KDB 987594. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's limits.

The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:

REGULATORY INFORMATION

USA - Federal Communications Commission (FCC)

This wireless adapter is restricted to indoor use due to its operation in the 5.15 to 5.25 and 5.470 to 5.75GHz frequency ranges. No configuration controls are provided for Intel® wireless adapters allowing any change in the frequency of operations outside the FCC grant of authorization for U.S. operation according to Part 15.407 of the FCC rules.

- Intel® wireless adapters are intended for installation by OEM integrators only.
- Intel® wireless adapters cannot be co-located with any other transmitter unless without further evaluation and acceptance by the FCC.
- Intel® wireless adapters must be used with the same type of antenna with equal or less maximum gains from the original approval.
- No trace antenna designs permitted without additional evaluation and FCC approval.
- Intel® wireless adapters are single modular approvals with no limited module conditions specified.

This wireless adapter complies with Part 15.247 and 15.407 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

Class B Device Interference Statement

This wireless adapter 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 wireless adapter generates, uses, and can radiate radio frequency energy. If the wireless adapter is not installed and used in accordance with the instructions, the wireless adapter may cause harmful interference to radio communications. There is no guarantee, however, that such interference will not occur in a particular installation. If this wireless adapter 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna of the equipment experiencing the interference.
- Increase the distance between the wireless adapter and the equipment experiencing the interference. - Connect the computer with the wireless adapter to an outlet on a circuit different from that to which the equipment experiencing the interference is connected.
- onsult the dealer or an experienced radio/TV technician for help.

NOTE: The adapter must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

Modular Regulatory Certification Country Markings

The following regulatory IDs must be included on host labeling for systems incorporating an Intel® wireless adapter, in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

Intel® Wi-Fi 6 AX200 (AX200NGW)

USA: Model AX200NGW, FCC ID: PD9AX200NG

Canada: Model AX200NGW, IC: 1000M-AX200NG

Intel® Wi-Fi 6 AX200 (AX200D2WL)

Due to the very small size of the AX200D2WL, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX200D2WL, FCC ID: PD9AX200D2L

Canada: Model AX200D2WL, IC: 1000M-AX200D2L

Intel® Wi-Fi 6 AX201 (AX201NGW)

USA: Model AX201NGW FCC ID: PD9AX201NG

Canada: Model AX201NGW, IC: 1000M-AX201NG

Intel® Wi-Fi 6 AX201 (AX201D2W)

Due to the very small size of the AX201D2W, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX210D2W FCC ID: PD9AX201D2

Canada: Model AX210D2W IC: 1000M-AX201D2

Intel® Wi-Fi 6 AX201 (AX201D2WL)

Due to the very small size of the AX201D2WL, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX201D2WL, FCC ID: PD9AX201D2L

Canada: Model AX201D2WL, IC: 1000M-AX201D2L

Intel® Wi-Fi 6 AX203 (AX203NGW)

USA: Model AX203NGW, FCC ID: PD9AX203NG
Canada: Model AX203NG, IC: 1000M-AX203NG

Intel® Wi-Fi 6 AX203 (AX203D2W)

Due to the very small size of the AX203D2W, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX203D2W, FCC ID: PD9AX203D2
Canada: Model AX203D2W, IC: 1000M-AX203D2

Intel® Wi-Fi 6 AX101 (AX101NGW)

USA: Model AX101NGW, FCC ID: PD9AX101NG
Canada: Model AX101G, IC: 1000M-AX101NG

Intel® Wi-Fi 6 AX101 (AX101D2W)

Due to the very small size of the AX1091D2W, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.
USA: Model AX101D2W, FCC ID: PD9AX101D2
Canada: Model AX101D2W, IC: 1000M-AX101D2

Intel® Wi-Fi 6E AX210 (AX210NGW)

FCC ID: PD9AX210NG
IC: 1000M-AX210NG

Intel® Wi-Fi 6E AX210 (AX210D2W)

Due to the very small size of the AX210D2W, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX210D2W, FCC ID: PD9AX210D2
Canada: Model AX210D2W, IC: 1000M-AX210D2

Intel® Wi-Fi 6E AX211 (AX211NGW)

FCC ID: PD9AX211NG
IC: 1000M-AX211NG

Intel® Wi-Fi 6E AX211 (AX211D2W)

Due to the very small size of the AX211D2W, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

USA: Model AX211D2W, FCC ID: PD9AX211D2
Canada: Model AX211D2W, IC: 1000M-AX211D2

Intel® Wi-Fi 6E AX211 (AX211D2WL)

Due to the very small size of the AX211D2WL, the marking has been placed in this user manual because the product label on the device is considered too small to be readable.

FCC ID: PD9AX211D2L
IC: 1000M-AX211D2L

INFORMATION FOR OEMs and HOST INTEGRATORS

The guidelines described within this document are provided to OEM integrators installing Intel® wireless adapters in notebook and tablet PC host platforms. Adherence to these requirements is necessary to meet the conditions of compliance with FCC rules, including RF exposure. When all antenna type and placement guidelines described herein are fulfilled the Intel® wireless adapters may be incorporated into notebook and tablet PC host platforms with no further restrictions. If any of the guidelines described herein are not satisfied it may be necessary for the OEM or integrator to perform additional testing and/or obtain additional approval. The OEM or integrator is responsible to perform the required additional host regulatory testing and/or obtaining the required host approvals for compliance.

- Intel® wireless adapters are intended for installation by OEMs and host integrators only.
- The Intel® wireless adapter FCC Grant of Authorization describes any limited conditions of modular approval.
-The Intel® wireless adapters must be operated with an access point that has been approved for the country of operation.
-Changes or modification to Intel® wireless adapters by OEMs, integrators or other third parties is not permitted. Any changes or modification to Intel® wireless adapters by OEMs, integrators or other third parties will void authorization to operate the adapter.

Antenna Type and Gains

Only antennas of the same type and with equal or less gains as shown in the tables below shall be used with the Intel® wireless adapters. Other types of antennas and/or higher gain antennas may require additional authorization for operation. For testing purposes the following dual band antenna that approximates closely the above limits was used:

Antenna Type	Antenna Location (Main/Aux)	2.4GHz Peak Gain in dBi*	5.2GHz Peak Gain in dBi*	5.5GHz Peak Gain in dBi*	5.7GHz Peak Gain in dBi*
PIFA	Main				
	Aux	3.24	3.73	4.77	4.77
	MIMO				
*All antenna gains include cable loss.					

Antenna Type	Antenna Location (Main/Aux)	6.2GHz Peak Gain in dBi*	6.5GHz Peak Gain in dBi*	6.6GHz Peak Gain in dBi*	7GHz Peak Gain in dBi*
PIFA	Main				
	Aux	4.83	4.30	5.37	5.59
	MIMO				
*All antenna gains include cable loss.					

Conditions To Be Observered By Use of 6GHz Bands (5.925GHz - 7.125Ghz)

An indoor client device (6XD), where a client device is defined in FCC Part. 15.202, is limited to indoor locations and is under control of a low-power indoor access point (6ID) or subordinate(6PP). It is only possible to operate the client device can only operate under the control of a low-power indoor access point and subordinate.

A client may initiate brief messages to associate with a low-power indoor access point or subordinate and establish a connection only after receiving a confirmation signal confirming that an AP is present and operating on a particular channel. After being associated, the indoor client can only initiate transmission with that access point. Indoor client devices (6XD) are prohibited from making a direct air interface connection to other clients.

An indoor client device cannot have a direct connection to the internet.

Simultaneous Transmission of Intel® Wireless Adapters with Other Integrated or Plug-In Transmitters

Based upon FCC Knowledge Database publication number 616217, when there are multiple transmitting devices installed in a host device, an RF exposure transmitting assessment shall be performed to determine the necessary application and test requirements. OEM integrators must identify all possible combinations of simultaneous transmission configurations for all transmitters and antennas installed in the host system. This includes transmitters installed in the host as mobile devices (>20 cm separation from user) and portable devices (<20 cm separation from user). OEM integrators should consult the actual FCC KDB 616217 document for all details in making this assessment to determine if any additional requirements for testing or FCC approval is necessary.a

Antenna Placement Within the Host Platform

To ensure RF exposure compliance the antenna(s) used with the Intel® wireless adapters must be installed in notebook or tablet PC host platforms to provide a minimum separation distance from all persons, in all operating modes and orientations of the host platform, with strict adherence to the table below. The antenna separation distance applies to both horizontal and vertical orientation of the antenna when installed in the host system. Any separation distances less than those shown will require additional evaluation and FCC authorization.

For WiFi/Bluetooth combination adapters it is recommended that a 5 cm separation distance between transmitting antennas be provided within the host system to maintain an adequate separation ratio for simultaneous WiFi and Bluetooth transmission. For less than 5 cm separation the separation ratio must be verified according to FCC publication KDB 447498 for the specific adapter.

Intel® WiFi 6E AX101 (AX101NGW)	18mm
Intel® WiFi 6E AX101 (AX101D2W)	13mm
Intel® Wi-Fi 6 AX201 (AX201D2W)	12 mm
Intel® Wi-Fi 6 AX201 (AX201D2WL)	15 mm
Intel® Wi-Fi 6 AX201 (AX201NGW)	17 mm
Intel® Wi-Fi 6E AX203 (AX203NGW)	18mm
Intel® Wi-Fi 6E AX203 (AX203D2W)	16mm
Intel® Wi-Fi 6E AX210 (AX210NGW)	13 mm
Intel® Wi-Fi 6E AX210 (AX210D2W)	17 mm
Intel® Wi-Fi 6E AX211 (AX211NGW)	14mm
Intel® Wi-Fi 6E AX211 (AX211D2W)	14mm
Intel® Wi-Fi 6E AX211(AX211D2WL)	15mm

Explosive Device Proximity Warning

Warning: Do not operate a portable transmitter (including this wireless adapter) near unshielded blasting caps or in an explosive environment unless the transmitter has been modified to be qualified for such use.

Antenna Warnings: The wireless adapter is not designed for use with high-gain directional antennas for any frequency band.

Use On Aircraft Caution

Caution: Regulations of commercial airline operators may prohibit airborne operation of certain electronic devices equipped with radio-frequency wireless devices (wireless adapters) because their signals could interfere with critical aircraft instruments.

Caution: This device is prohibited against use for the control of or communications with unmanned aircraft systems, including drones

Information To Be Supplied to the End User by the OEM or Integrator

The wireless adapter must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Intel Corporation is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the wireless adapter kit or the substitution or attachment of connecting cables and equipment other than that specified by Intel Corporation. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Intel Corporation and authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Local Restriction of 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ad Radio Usage

The following statement on local restrictions must be published as part of the compliance documentation for all 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ad products.

Caution: Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g, 802.11n, 802.11ad and 802.11ax wireless LAN devices may not yet be harmonized in all countries for these products and are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. Any deviation from permissible settings and restrictions in the country of use could be an infringement of national law and may be punished as such.