

# Information for the User

## Safety Notices

### USA—FCC and FAA

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 limits found in OET Bulletin 65, supplement C, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended 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:
  - o The use of wireless adapters in hazardous locations is limited by the constraints posed by the safety directors of such environments.
  - o The use of wireless adapters on airplanes is governed by the Federal Aviation Administration (FAA) and as set forth by each airline.
  - o The use of wireless adapters in hospitals is restricted to the limits set forth by each hospital.

### Antenna Use

- To comply with FCC RF exposure limits, it is recommended that for the wireless adapter installed in a host computer, the low gain integrated antennas for this device should be located at a minimum separation distance from the body of all persons as specified according to the FCC modular grant conditions.

### 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 the FCC, FAA and individual airlines prohibit airborne operation of some radio-frequency wireless devices (wireless adapters) because their signals could interfere with critical aircraft instruments.

### Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: See the documentation supplied with wireless adapters or other devices in the wireless network.

Local Restrictions on 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.11ax, and 802.16e Radio Usage

Caution: Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.11ax and 802.16e wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e products 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. The device transmit power control (TPC) interface is part of the Intel® PROSet/Wireless Wi-Fi Connection Utility Software. Operational restrictions for Equivalent Isotropic Radiated Power (EIRP) are provided by the system manufacturer. Any deviation from the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

For country-specific information, see the additional compliance information supplied with the product.

#### Wireless Interoperability

The wireless adapter is designed to be interoperable with other wireless LAN products that are based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b compliant Standard on Wireless LAN
- IEEE Std. 802.11g compliant Standard on Wireless LAN

#### IEEE Std. 802.11n compliant Standard on Wireless LAN

- IEEE Std. 802.11ac compliant Standard on Wireless LAN
- IEEE Std. 802.11ax compliant Standard on Wireless LAN
- IEEE 802.16e-2005 Wave 2 compliant
- Wireless Fidelity certification, as defined by the Wi-Fi Alliance
- WiMAX certification as defined by the WiMAX Forum

#### The Wireless Adapter and Your Health

The wireless adapter, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by the wireless adapter, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The wireless adapter operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the wireless adapter may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situation may include:

- Using the wireless adapter on board airplanes, or
- Using the wireless adapter in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless adapters in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the

adapter before you turn it on.

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

The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating the Intel® wireless adapter, in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

The Intel® 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, and 802.11n 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 and 802.11n products.

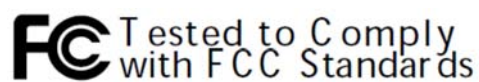
Caution: Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e products are designed for use only in specific countries, and are not allowed to be operated 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 the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

#### FCC Radio Frequency Interference Requirements

This wireless adapter is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this wireless adapter to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device.

- This wireless adapter is intended for OEM integrators only.
- This wireless adapter cannot be co-located with any other transmitter unless approved by the FCC based upon FCC Knowledge Database publication number 616217 D03 (Supplement) when there are multiple radios installed in a host device, RF exposure transmitting assessment shall be performed to determine the necessary application and test requirements. Certain criteria can be used in determine the requirement for simultaneous SAR evaluation and whether Class I or Class II permissive change may apply. OEM integrators must consult the actual FCC KDB 616217 Supplement document for details

## USA—Federal Communications Commission (FCC)



This wireless adapter complies with Part 15 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.
- The requirements described within this document are provided to OEM's and system integrators installing the wireless adapter in host platforms. Strict adherence to these requirements is necessary to meet the conditions of compliance with FCC and Industry Canada rules for RF exposure. When all requirements described herein are fulfilled the wireless adapter may be installed in host platforms with no further RF exposure restrictions when

Intel® Corporation—CCG Intel Client Computing Group –Wireless Test & Certification Center (WTCC) integrating. If any of the requirements herein are not fulfilled then additional testing and FCC/IC Permissive Changes may be required with the specific host platform and/or antennas for compliance.

### Antenna Type and Gains

- Only antennas of the same type and with equal or less gains as described in Table-1 below may be used with the wireless adapter. Other types of antennas and/or higher gain antennas can only be authorized by Permissive Change.

#### • Tabel-1: Worst Case Antenna Gain Definition

| 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. |                             |                          |                          |                          |                        |

### Antenna Gain table updated for UNII-4

#### Antenna Type and Gains

Only antennas of the same type and with equal or less gains as 3dBi for the 2.4GHz band and 5dBi for the 5GHz band 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* | 5.9GHz Peak Gain in dBi* | 6.2GHz Peak Gain in dBi* | 6.5GHz Peak Gain in dBi* | 6.7GHz Peak Gain in dBi* | 7GHz Peak Gain in dBi* |
|--------------|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|
| PIFA         | Main/Aux                    | 3.24                     | 3.73                     | 4.77                     | 4.77                     | 4.97**                   | 4.83                     | 4.30                     | 5.37                     | 5.59                   |

|              |               | Peak Gain w: cable loss (dBi) |        |        |         |        |        |        |        |
|--------------|---------------|-------------------------------|--------|--------|---------|--------|--------|--------|--------|
| Antenna Type | (Main/Aux)    | 2.4GHz                        | 5.2GHz | 5.5GHz | 5.8 GHz | 6.2GHz | 6.5GHz | 6.7GHz | 6.9GHz |
| Dipole       | Main/Aux MIMO | 3.10                          | 4.11   | 5.17   | 5.17    | 5.06   | 4.71   | 4.49   | 5.34   |

NOTE for desktop solution: To avoid the possibility of exceeding the FCC radio frequency exposure limits, a minimum distance of 20 cm separation between persons and the external antennas must be maintained. The adapter operates below the FCC limits for radio frequency exposure, but the host system should be installed and operated in such a manner that the potential for human contact is avoided. Details of the authorized configurations can be found at <http://www.fcc.gov/oet/ea/> by entering the FCC ID number on the 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.
- Consult 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                                                                                           | <b>Marking is on the board label</b>                                  | GfP2 AX + BT 2X2 – M.2 1216<br>Model: <b>AX211D2W</b> |
| <b>USA</b><br> | (Due to size constraint, marking will be on packaging and User Guide) | <b>FCC ID: VUIAX211D2</b>                             |