# AW-CU603

## Wireless MCU with Integrated Wi-Fi 6 Microcontroller Module

## Datasheet

**Rev. A**

**DF**

**For Dell**

# Features

## WLAN

- 1x1 dual-band 2.4 GHz/5 GHz Wi-Fi 6 radio
- 20 MHz channel operation
- Wi-Fi 6 Target Wake Time(TWT) support
- Wi-Fi 6 Extended Range (ER) and Dual Carrier Modulation (DCM)
- Low-power Wi-Fi idle, standby, and sleep modes
- WPA/WPA2/WPA3 personal and enterprise
- Support for Matter over Wi-Fi

# Revision History

Document NO: R2-2603-DST-01

| Version | Revision Date | DCN NO. | Description | Initials | Approved |
|---|---|---|---|---|---|
| A | 2024/05/07 | DCN031572 | ● Draft version | Roger Liu | N.C Chen |
| | | | | | |
| | | | | | |
| | | | | | |

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# 1. Introduction

## 1.1 Product Overview

AzureWave **AW-CU603** is a highly integrated, low-power Wireless RW610 MCU with an integrated MCU and Wi-Fi 6 designed for a broad array of applications. Applications include connected smart home devices, enterprise and industrial automation, smart accessories, and smart energy.

AW-CU603 includes a 260 MHz Arm Cortex-M33 core with TrustZone-M, 1.2 MB on-chip SRAM and a Quad SPI interface with high bandwidth, and an on-the-fly decryption engine for securely accessing off-chip XIP flash.

**AW-CU603** includes a full-featured 1x1 dual-band (2.4 GHz / 5 GHz) 20 MHz Wi-Fi 6 (802.11ax) subsystem bringing higher throughput, better network efficiency, lower latency, and improved range over previous generation Wi-Fi standards.

The advanced design of the **AW-CU603** delivers tight integration, low power, and highly secure operation in a space- and cost-efficient wireless MCU requiring only a single 3.3 V power supply.

## 1.2 Block Diagram

TBD

## 1.3 Specifications Table

### 1.3.1 General

| Features | Description |
|---|---|
| **Product Description** | Wi-Fi 6 1x1 Microcontroller Module |
| **Major Chipset** | NXP RW610 HVQFN (116 pins) |
| **Host Interface** | UART / I2C / USB |
| **Dimension** | 22 mm x 30 mm x 2.45 mm |
| **Package** | M.2 2230 |
| **Antenna** | I-PEX MHF4 Connector Receptacle (20449)<br>1x1 diversity on MAIN ANT and AUX ANT |
| **Weight** | 2.64g |

### 1.3.2 WLAN

| Features | Description |
|---|---|
| **WLAN Standard** | IEEE 802.11 a/b/g/n/ac/ax 1T1R |
| **WLAN VID/PID** | NA |
| **WLAN SVID/SPID** | NA |
| **Frequency Rage** | ■ 2.4 GHz ISM Bands 2.412-2.472 GHz<br>■ 5.15-5.25 GHz (FCC UNII-low band) for US/Canada and Europe<br>■ 5.25-5.35 GHz (FCC UNII-middle band) for US/Canada and Europe<br>■ 5.47-5.725 GHz for Europe<br>■ 5.725-5.825 GHz (FCC UNII-high band) for US/Canada<br>■ 5.825-5.885 GHz (FCC UNII-4) for US/Canada |
| **Modulation** | DSSS, OFDM, DBPSK, DQPSK, CCK,16-QAM, 64-QAM, 256-QAM, |
| **Number of Channels** | 2.4GHz:<br>■ USA, NORTH AMERICA, Canada and Taiwan - 1 ~ 11<br>■ China, Australia, Most European Countries - 1 ~ 13<br>■ Japan, 1 ~ 13<br><br>5GHz:<br>■ USA, Canada, Most European Countries -36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, |

<table>
<tr><td></td><td>149, 153, 157, 161, 165, 169, 173, 177<br>■ Japan - 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140<br>■ China - 36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165</td></tr>
<tr><td>Output Power<br>(Board Level Limit)*</td><td>2.4G
<table>
<tr><th></th><th>Min</th><th>Typ</th><th>Max</th><th>Unit</th></tr>
<tr><td>11b (11Mbps)<br>@EVM<35%</td><td>16</td><td>18</td><td>20</td><td>dBm</td></tr>
<tr><td>11g (54Mbps)<br>@EVM≦-25 dB</td><td>14.5</td><td>16</td><td>17.5</td><td>dBm</td></tr>
<tr><td>11n (HT20 MCS7)<br>@EVM≦-27 dB</td><td>13.5</td><td>15</td><td>16.5</td><td>dBm</td></tr>
<tr><td>11ax(HE20 MCS9)<br>@EVM≦-32 dB</td><td>12.5</td><td>14</td><td>15.5</td><td>dBm</td></tr>
</table>
5G
<table>
<tr><th></th><th>Min</th><th>Typ</th><th>Max</th><th>Unit</th></tr>
<tr><td>11a (54Mbps)<br>@EVM≦-25 dB</td><td>14</td><td>16</td><td>18</td><td>dBm</td></tr>
<tr><td>11n (HT20 MCS7)<br>@EVM≦-27 dB</td><td>13</td><td>15</td><td>17</td><td>dBm</td></tr>
<tr><td>11ac(VHT20 MCS8)<br>@EVM≦-30 dB</td><td>12</td><td>14</td><td>16</td><td>dBm</td></tr>
<tr><td>11ax(HE20 MCS9)<br>@EVM≦-32 dB</td><td>11</td><td>13</td><td>15</td><td>dBm</td></tr>
</table></td></tr>
<tr><td>Receiver Sensitivity</td><td>2.4G
<table>
<tr><th></th><th>Min</th><th>Typ</th><th>Max</th><th>Unit</th></tr>
<tr><td>11b (11Mbps)</td><td>-</td><td>-87</td><td>-84</td><td>dBm</td></tr>
<tr><td>11g (54Mbps)</td><td>-</td><td>-73</td><td>-70</td><td>dBm</td></tr>
<tr><td>11n (HT20 MCS7)</td><td>-</td><td>-70</td><td>-67</td><td>dBm</td></tr>
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</table></td></tr>
</table>

| | |
|---|---|
| **Data Rate** | WLAN:<br>802.11b : 1, 2, 5.5, 11Mbps<br>802.11a/g : 6, 9, 12, 18, 24, 36, 48, 54Mbps<br>802.11n : Maximum data rates up to 72 Mbps (20 MHz channel)<br>802.11ac: Maximum data rates up to 87 Mbps (20 MHz channel)<br>802.11ax: Maximum data rates up to 115 Mbps (20 MHz channel) |
| **Security** | ■ Wi-Fi: WPA2/WPA3 personal and enterprise and AES/CCMP/CMAC/GCMP |

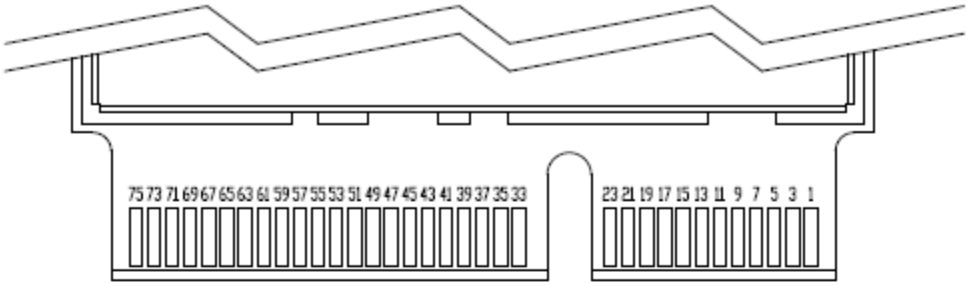
* If you have any certification questions about output power please contact FAE directly.

### 1.3.3 Operating Conditions

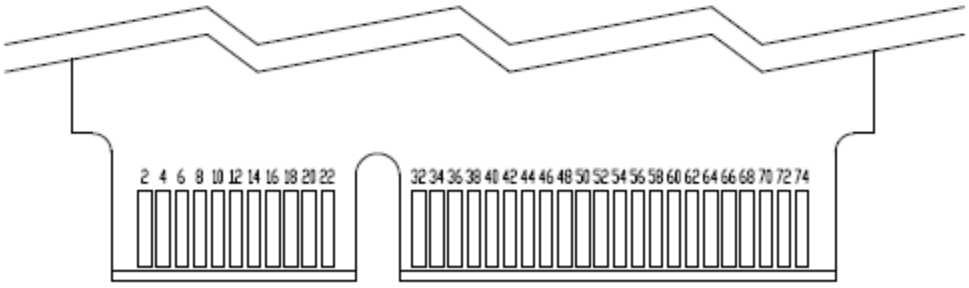
| Features | Description |
|---|---|
| **Operating Conditions** | |
| **Voltage** | 3.3V +-5% |
| **Operating Temperature** | -40℃ to +85℃ |
| **Operating Humidity** | Less than 85% R.H. |
| **Storage Temperature** | -40℃ to +85℃ |
| **Storage Humidity** | Less than 60% R.H. |
| **ESD Protection** | |
| **Human Body Model** | TBD |
| **Changed Device Model** | TBD |

# 2. Pin Definition

## 2.1 Pin Map




PIN DEFINED (TOP VIEW)




PIN DEFINED (BOTTOM VIEW)

## 2.2 Pin Table

| Pin No | Definition | Basic Description | Voltage | Type |
|---|---|---|---|---|
| 1 | GND | Ground | | GND |
| 2 | +3.3V | 3.3V power supply. | 3.3V | Power |
| 3 | USB_D+ | USB bus data+ | 3.3V | I/O |
| 4 | +3.3V | 3.3V power supply | 3.3V | Power |
| 5 | USB_D- | USB bus data- | 3.3V | I/O |
| 6 | LED1# | GPIO[11], PWM output | 3.3V | I/O |
| 7 | GND | Ground | | GND |
| 8 | NC | No connect to anything | | Floating |
| 9 | NC | No connect to anything | | Floating |
| 10 | NC | No connect to anything | | Floating |
| 11 | NC | No connect to anything | | Floating |
| 12 | NC | No connect to anything | | Floating |
| 13 | NC | No connect to anything | | Floating |
| 14 | NC | No connect to anything | | Floating |
| 15 | NC | No connect to anything | | Floating |
| 16 | LED2# | GPIO[42], ADC0 channel 0 | 3.3V | I/O |
| 17 | NC | No connect to anything | | Floating |
| 18 | GND | Ground. | | GND |
| 19 | GND | Ground. | | GND |
| 20 | UART WAKE# | UART Host Wake | 3.3V | O |
| 21 | NC | No connect to anything | | Floating |
| 22 | UART TxD | UART_SOUT | 3.3V | O |
| 23 | NC | No connect to anything | | Floating |
| 32 | UART RxD | UART_SIN | 3.3V | I |
| 33 | GND | Ground. | | GND |
| 34 | UART RTS | UART_RTS | 3.3V | O |
| 35 | NC | No connect to anything | | Floating |
| 36 | UART CTS | UART_CTS | 3.3V | I |
| 37 | NC | No connect to anything | | Floating |
| 38 | Board ID | GPIO[43] | 3.3V | I/O |
| 39 | GND | Ground | | GND |
| 40 | CONFIG_HOST _BOOT[0] | Host configuration options<br>**HW Strap pin for ISP boot mode or for programing Flash** | 1.8V | I/O |

| | | | | |
|---|---|---|---|---|
| | | 1= Boot from FlexSPI Flash (Default)<br>0= ISP boot from UART to programing flash | | |
| 41 | NC | No connect to anything | | Floating |
| 42 | Vendor defined | Reserve<br>No connect to anything | | Floating |
| 43 | NC | No connect to anything | | Floating |
| 44 | Alert# _EC | GPIO[22] | 3.3V | O |
| 45 | GND | Ground | | GND |
| 46 | I2C1_DATA | GPIO[9]<br>FC1_RXD_SDA_MOSI_DATA_I2C:<br>Flexcomm1 I2C data in/out | 3.3V | I/O |
| 47 | NC | No connect to anything | | Floating |
| 48 | I2C1_CLK | GPIO[8]<br>FC1_TXD_SCL_MISO_WS_I2C:<br>Flexcomm1 I2C clock | 3.3V | I/O |
| 49 | NC | No connect to anything | | Floating |
| 50 | NC | No connect to anything | | Floating |
| 51 | GND | Ground | | GND |
| 52 | NC | No connect to anything | | Floating |
| 53 | NC | No connect to anything | | Floating |
| 54 | NC | No connect to anything | | Floating |
| 55 | NC | No connect to anything | | Floating |
| 56 | W_DISABLE1# | Full Power-down (input) (active low)<br>0 = full power-down mode<br>1 = normal mode<br>This pin has internal pull high 51k resistor to 3.3V | 3.3V | I |
| 57 | GND | Ground | | GND |
| 58 | I2C0_DATA | GPIO[2]<br>FC0_RXD_SDA_MOSI_DATA_I2C:<br>Flexcomm0 I2C data in/out | 3.3V | I/O |
| 59 | NC | No connect to anything | | Floating |
| 60 | I2C0_CLK | GPIO[3]<br>FC0_TXD_SCL_MISO_WS_I2C:<br>Flexcomm0 I2C clock | 3.3V | I/O |
| 61 | NC | No connect to anything | | Floating |
| 62 | ALERT# | GPIO[27] | 3.3V | O |
| 63 | GND | Ground | | GND |
| 64 | NC | No connect to anything | | Floating |
| 65 | NC | No connect to anything | | Floating |
| 66 | NC | No connect to anything | | Floating |

| | | | | |
|---|---|---|---|---|
| 67 | NC | No connect to anything | | Floating |
| 68 | NC | No connect to anything | | Floating |
| 69 | GND | Ground | | GND |
| 70 | NC | No connect to anything | | Floating |
| 71 | NC | No connect to anything | | Floating |
| 72 | +3.3V | 3.3V power supply | 3.3V | Power |
| 73 | NC | No connect to anything | | Floating |
| 74 | +3.3V | 3.3V power supply | 3.3V | Power |
| 75 | GND | Ground | | GND |

# 3. Electrical Characteristics

## 3.1 Absolute Maximum Ratings

| Symbol | Parameter | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| VBAT | DC supply for the 3.3V input | - | 3.3 | 3.96 | V |
| VIO | 1.8 V/3.3 V digital I/O power supply | - | 1.8 | 2.16 | V |
| | | | 3.3 | 3.96 | V |

## 3.2 Recommended Operating Conditions

| Symbol | Parameter | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| VBAT | DC supply for the 3.3V input | 3.14 | 3.3 | 3.46 | V |
| VIO | 1.8 V/3.3 V digital I/O power supply | 1.71 | 1.8 | 1.89 | V |
| | | 3.14 | 3.3 | 3.46 | V |

## 3.3 Digital IO Pin DC Characteristics

### 3.3.1 VIO 1.8V Operation

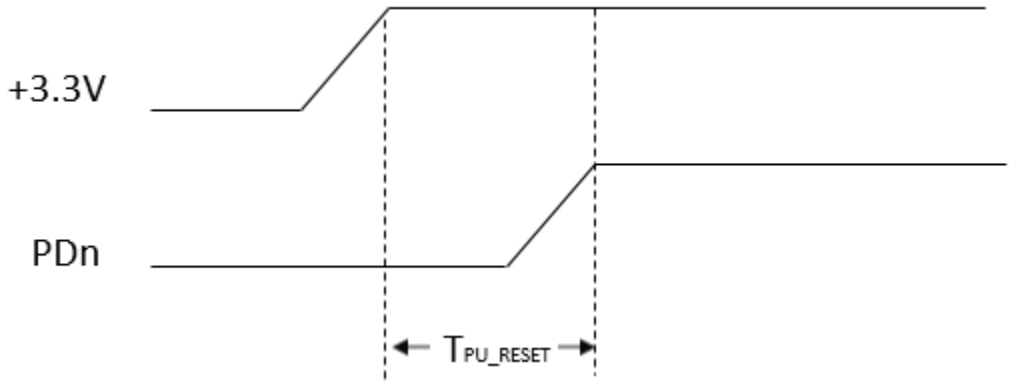
| Symbol | Parameter | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| VIO | I/O pad supply voltage | 1.62 | 1.8 | 1.98 | V |
| $V_{IH}$ | Input high voltage | 0.7*VIO | - | VIO+0.4 | V |
| $V_{IL}$ | Input low voltage | -0.4 | - | 0.3*VIO | |
| $V_{OH}$ | Output High Voltage | VIO-0.4 | - | - | |
| $V_{OL}$ | Output Low Voltage | - | - | 0.4 | |
| $V_{HYS}$ | Input Hysteresis | 100 | | | mV |

### 3.3.2 VIO 3.3V Operation

| Symbol | Parameter | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| VIO | I/O pad supply voltage | 2.97 | 3.3 | 3.63 | V |
| $V_{IH}$ | Input high voltage | 0.7*VIO | - | VIO+0.4 | V |
| $V_{IL}$ | Input low voltage | -0.4 | - | 0.3*VIO | |

| | | | | | |
|---|---|---|---|---|---|
| $V_{OH}$ | Output High Voltage | VIO-0.4 | - | - | |
| $V_{OL}$ | Output Low Voltage | - | - | 0.4 | |
| $V_{HYS}$ | Input Hysteresis | 100 | | | mV |

## 3.4 Power On Sequence




| Symbol | Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|---|
| $T_{PU\_RESET}$ | Valid power to PDn deasserted | 0 | - | - | ms |

## 3.5 Power Consumption

### 3.5.1 WLAN

| Band (GHz) | Mode | BW (MHz) | RF Power (dBm) | VBAT_IN=3.3 V | |
|---|---|---|---|---|---|
| | | | | Transmit | |
| | | | | Max. | Avg. |
| 2.4 | 11b@1Mbps | 20 | 18 | 291 | 286 |
| | 11g@54Mbps | 20 | 16 | 266 | 251 |
| | 11n@MCS7 | 20 | 15 | 243 | 230 |
| | 11ax@MCS0 NSS1 | 20 | 14 | 235 | 230 |
| | 11ax@MCS11 NSS1 | 20 | 14 | 240 | 222 |
| 5 | 11a@6Mbps | 20 | 16 | 391 | 384 |
| | 11n@MCS7 | 20 | 15 | 375 | 354 |
| | 11ac@MCS0 NSS1 | 20 | 14 | 352 | 347 |
| | 11ac@MCS8 NSS1 | 20 | 14 | 350 | 327 |
| | 11ax@MCS0 NSS1 | 20 | 13 | 340 | 334 |
| | 11ax@MCS11 NSS1 | 20 | 13 | 337 | 315 |

| Band (GHz) | Mode | BW(MHz) | Receive | |
|---|---|---|---|---|
| | | | Max. | Avg. |
| 2.4 | 11b@11Mbps | 20 | 90 | 86 |
| | 11g@54Mbps | 20 | 92 | 89 |
| | 11n@MCS7 | 20 | 91 | 88 |
| | 11ax@MCS11 NSS1 | 20 | 87 | 83 |
| 5 | 11a@54Mbps | 20 | 108 | 104 |
| | 11n@MCS7 | 20 | 109 | 104 |
| | 11ac@MCS8 NSS1 | 20 | 107 | 104 |
| | 11ax@MCS11 NSS1 | 20 | 107 | 102 |

**Current Unit: mA**

### 3.5.2 Normal Mode

| VBAT_IN=3.3V | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MCU Status | WiFi Deep Sleep | WiFi STA Connected | | WiFi IEEE Power Saving | | | | WiFi Power Down |
| | | 2.4G | 5G | 2.4G | | 5G | | |
| | | | | DTIM 1 | DTIM10 | DTIM1 | DTIM 10 | |
| PM0(Active) | 27.1 | 71.8 | 91.5 | NA | | | | 27.2 |
| PM1(Idle) | 18.3 | 62.8 | 83.5 | 21.1 | 18.8 | 19.4 | 18.6 | 18.4 |
| PM2(Standby) | 7.1 | 51.9 | 72.5 | 10.2 | 7.7 | 8.2 | 7.6 | 7.0 |
| PM3(Sleep) | 2.7 | 50.3 | 71.2 | 6.0 | 3.2 | 3.8 | 3.7 | 2.7 |
| PM4(Shutdown) | NA | NA | | NA | | | | NA |

**Current Unit: mA**

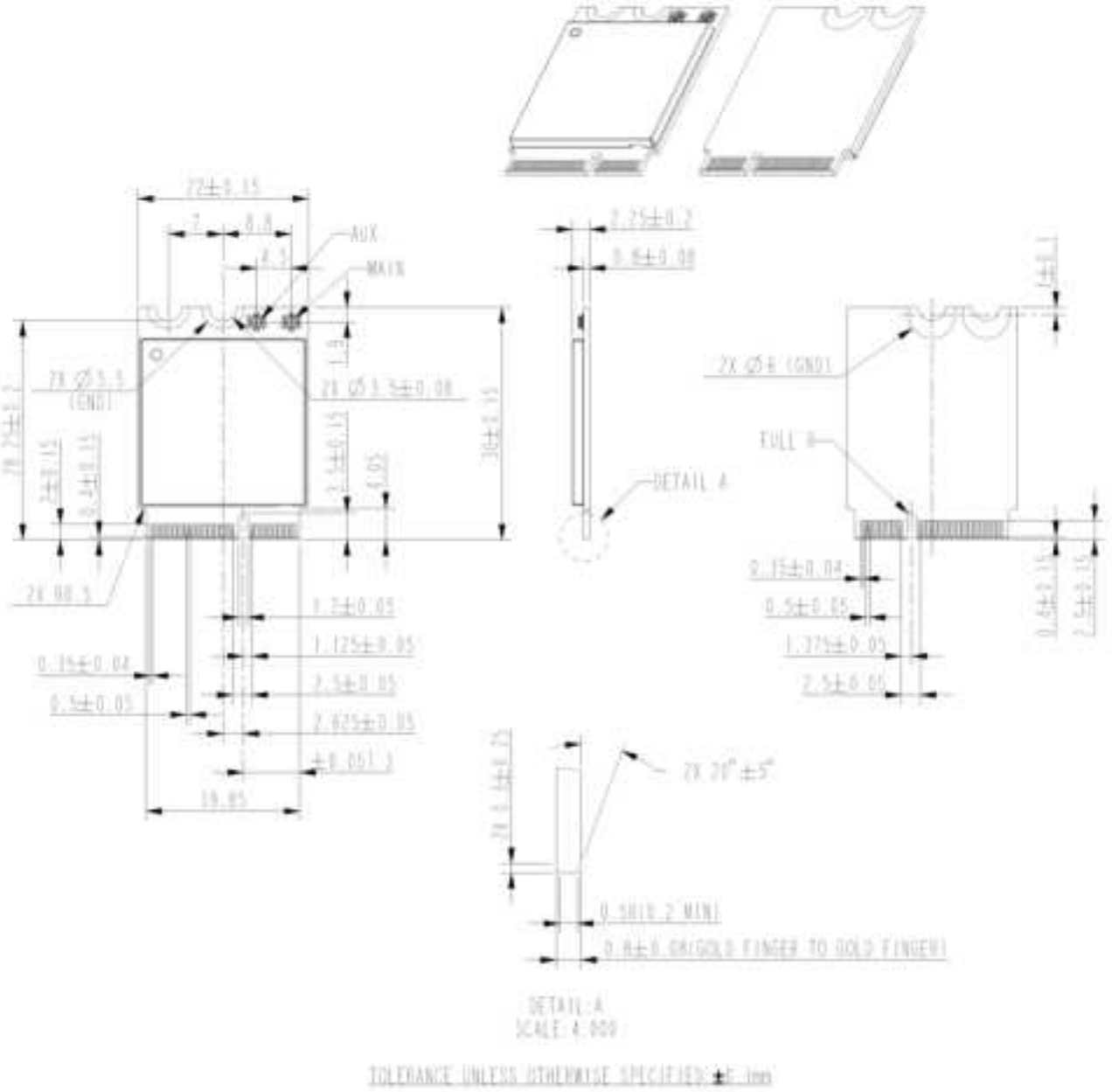
### 3.5.3 Peak Current

| No. | Item | VBAT=3.3 V |
|---|---|---|
| | | Max. |
| 1 | Peak current during device initialization | 547 |
| 2 | Peak current during device scan AP | 534 |
| 3 | Peak current during device connect AP | 515 |

**Current Unit: mA**

# 4. Mechanical Information

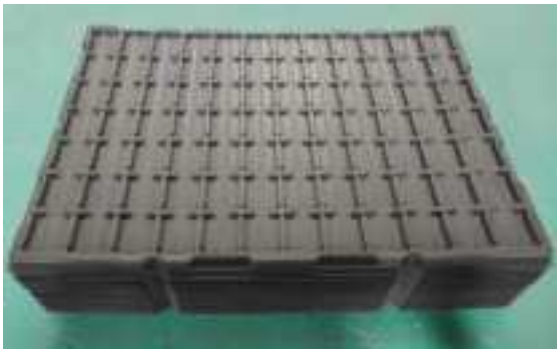
## 4.1 Mechanical Drawing




# 5. Packing Information

1. 84pcs M.2 2230 modules put in one tray

2. The trays are stacked with each other, and add more one tray on the top, so the total number of trays is 14pcs, i.e. 13pcs tray (full) and 1pcs tray (empty)



3. Use P.P Strap to pack 14pcs trays and add one packing label on the top

Example:


4. Put the two packed tray into the box

5. Seal the carton by AzureWave tape

6. One carton label and one box label pasted on the carton. If the carton is not full, add one balance label pasted on the carton

One carton label


One box label

**Label Information on the carton**

<table>
<tr><td>Example of Packing Label</td><td> 
</td></tr>
<tr><td>Example of carton label</td><td>
<table>
<tr><td colspan="2">AzureWave Technologies Inc.</td></tr>
<tr><td>AzureWave P/N</td><td>AW-CU603</td></tr>
<tr><td>Customer</td><td>Provided by Sales(由业务提供)</td></tr>
<tr><td>Customer P/N</td><td>Provided by Sales(由业务提供)</td></tr>
<tr><td>Customer P/O</td><td>Provided by Sales(由业务提供)</td></tr>
<tr><td>Description</td><td>AW-CU603</td></tr>
<tr><td>Q'ty</td><td>依照实际出货数量</td></tr>
<tr><td>C/N</td><td>依实际情况填写</td></tr>
<tr><td>N.W.</td><td>G.W.</td></tr>
<tr><td colspan="2">RoHS Made in China</td></tr>
</table>
</td></tr>
<tr><td>Example of box label</td><td> 
</td></tr>
<tr><td>Example of balance label</td><td> 
</td></tr>
</table>

**Note:**

- **1 Packed Tray = 13pcs Tray = 1092 pcs**
- **1 Carton = 2 Packed Tray = 2184 pcs**

**Federal Communication Commission Interference Statement**

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 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

**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 20cm between the radiator & your body.

# Industry Canada Statement

CAN ICES-3(B)/ NMB-3(B)
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) L'appareil ne doit pas produire de brouillage;
(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**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 greater than 20cm between the radiator & your body.
**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 à plus de 20 cm entre le radiateur et votre corps.

**Caution :**
(i) 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;
(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
(iii) for devices with detachable antenna(s), 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 as appropriate;
(iv) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.
**Avertissement:**
(i) 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;
(ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e;
(iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée, selon le cas;
(iv) lorsqu'il y a lieu, les types d'antennes (s'il y en a plusieurs), les numéros de modèle de l'antenne et les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, énoncée à la section 6.2.2.3, doivent être clairement indiqués.

**This module is limited to OEM installation ONLY.**

### 2.2 List of applicable FCC rules

Compliance with FCC Part 15C, 15E regulation.

### 2.3 Specific operational use conditions

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) will need a separate reassessment through a class II permissive change application or new certification.

### 2.4 Limited module procedures

Not applicable to this device

### 2.6 RF exposure considerations

This module is limited to installation in mobile or fixed applications, according to §2.1091(b). The separate approval is required for all other operating configurations, including portable configurations with respect to Part §2.1093 and different antenna configurations

### 2.7 Antennas:

(1) The antenna must be installed such that 20 cm is maintained between the antenna and users,
(2) The transmitter module may not be co-located with any other transmitter or antenna.
(3) To comply with FCC/IC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile exposure condition must not exceed:
Antenna Type: PIFA
Antenna gain: 3.5 dBi in 2.4GHz (frequency); 5 dBi in 5 GHz (frequency)
Antenna Connector (if applicable): IPEX MHF4

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC/IC authorization is no longer considered valid and the FCC ID/IC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC/IC authorization.

### 2.8 Label and compliance information

When the module is installed in the host device, the FCC ID/ IC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: “Contains FCC ID: TLZ-CU603”, “Contains IC: 6100A-CU603 “
The grantee's FCC ID/IC ID can be used only when all FCC/IC compliance requirements are met.

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

**Federal Communication Commission Interference Statement**

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.

For a **Class A** digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For a **Class B** digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**Industry Canada Statement**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.
L’exploitation est autorisée aux deux conditions suivantes :
(1) L’appareil ne doit pas produire de brouillage;

(2) L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

### 2.9 Information on test modes and additional testing requirements

This radio module must not be installed to co-locate and operating simultaneously with other radios in the host system except in accordance with FCC multi-transmitter product procedures. Additional testing and equipment authorization may be required operate simultaneously with other radio.

### 2.10 Additional testing, Part 15 Subpart B disclaimer

The host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s).

### 2.11 Note EMI Considerations

Please follow the guidance provided for host manufacturers in KDB publications 996369 D02 and D04.

### 2.12 How to make changes

Only Grantees are permitted to make permissive changes. Please contact us if the host integrator expect the module to be used differently than as granted:
Company Name: AzureWave Technologies (USA), Inc.
Company Address:467 Saratoga ave #108 San Jose, CA 95129 United States

NCC :
取得審驗證明之低功率射頻器材，非經核准，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。低功率射頻器材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。
前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材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。
應避免影響附近雷達系統之操作。
本模組於取得認證後將依規定於模組本體標示審驗合格標籤，並要求平台廠商於平台上標示「本產品內含射頻模組CC XX xx LP yyy Z z。」

Japan :
5GHz band (W52,W53): Indoor use only (except communicate to W52 high power radio)