

## WUBT-236ACN(BT) Series

802.11ac/a/b/g/n 2T2R

Wi-Fi + Bluetooth 4.2 USB Module



### Support Multiple Operation Systems (Android/Linux/Windows)

SparkLAN WUBT-236ACN(BT) is a highly integrated single-chip Wireless LAN (WLAN), Bluetooth USB module which supports 2 streams 802.11ac solutions with multi-user MIMO (Multiple-Input, Multiple-Output) wireless LAN (WLAN) and integrated Bluetooth 4.2. It is integrated 2Tx2R WLAN MAC, baseband, and dual band RF in a single chip USB module. WUBT-236ACN(BT) provides a cost effective solution for M2M (machine to machine) connectivity product/device by one USB port, it can be easily integrated into the most familiar operation system (Android/Linux/Windows).

WUBT-236ACN(BT) 802.11ac/abgn 2Tx2R USB WLAN/BT module with various USB input format & internal printing or external RF antenna connector for high performance wireless LAN and Bluetooth device. It is designed to provide completely M2M connection & excellent cost performance with low power consumption and enhance the advantages of robust system & applications.

#### Embedded Application

Applications include portable handheld devices, thin client computer, medical devices, network security & monitoring, 3D printer, TV, STB, POS, digital signs, gaming machine, robotic machinery, industrial tablets, etc.

#### Key Feature

- 802.11ac/a/b/g/n Wi-Fi +Bluetooth
- Support 802.11ac 2x2, compliant with MU-MIMO. Operates in 2.4GHz and 5GHz frequency bands
- Maximum data rates: 54Mbps in 802.11g, 300Mbps in 802.11n, 866.7Mbps in 802.11ac.
- Support Multiple Operation Systems (Android/Linux/Windows)

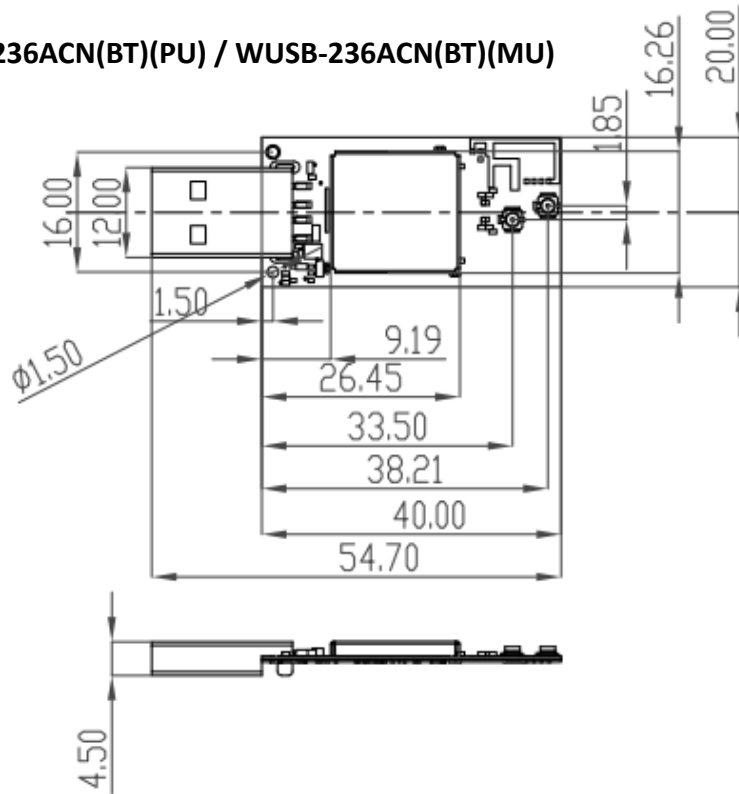
**Specification**

|                                      |                                                                                                                                                                                                                                |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards</b>                     | IEEE 802.11ac/a/b/g/n (2T2R)<br>Bluetooth v2.1+EDR, v3.0, v4.1, v4.2 LE                                                                                                                                                        |
| <b>Chipset</b>                       | Realtek RTL8822BU                                                                                                                                                                                                              |
| <b>Data Rate</b>                     | 802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0~7/ 802.11ac: MCS0~9<br>Bluetooth: 1Mbps, 2Mbps and up to 3Mbps EDR                                                                                                         |
| <b>Operating Frequency</b>           | IEEE 802.11 ac/a/b/g/n ISM Band, 2.412GHz~2.484GHz, 5.150MHz~5.850MHz<br>*Subject to local regulations                                                                                                                         |
| <b>Interface</b>                     | USB for Wireless LAN & Bluetooth                                                                                                                                                                                               |
| <b>Form Factor</b>                   | 4-Pin Wafer connector / USB Type A                                                                                                                                                                                             |
| <b>Antenna</b>                       | 2 x IPEX connector or printed antenna for 2T2R (ANT 0 for WIFI only, ANT1 for WIFI+BT)                                                                                                                                         |
| <b>Modulation</b>                    | WiFi : 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11a/g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)<br>Bluetooth: GFSK, $\pi/4$ DQPSK, 8DPSK |
| <b>Power Consumption</b>             | TX Mode: 450mA<br>RX Mode: 250mA                                                                                                                                                                                               |
| <b>Operating Voltage</b>             | DC 5V                                                                                                                                                                                                                          |
| <b>Operating Temperature Range</b>   | -20°C ~+70°C                                                                                                                                                                                                                   |
| <b>Storage Temperature Range</b>     | -40°C ~+80°C                                                                                                                                                                                                                   |
| <b>Humidity<br/>(Non-Condensing)</b> | 5%~95% (Operating)<br>5%~90% (Storing)                                                                                                                                                                                         |
| <b>Dimension (in mm)</b>             | 40 x 20 mm ( $\pm 0.5$ mm)                                                                                                                                                                                                     |
| <b>Weight (g)</b>                    | (PU) / (MU) :4.6g ; (P4W) / (M4W) :2.8g                                                                                                                                                                                        |
| <b>Driver Support</b>                | Windows 7, 8.1, 10 / Linux / Android                                                                                                                                                                                           |
| <b>Security</b>                      | WEP, WPA, WPA2                                                                                                                                                                                                                 |

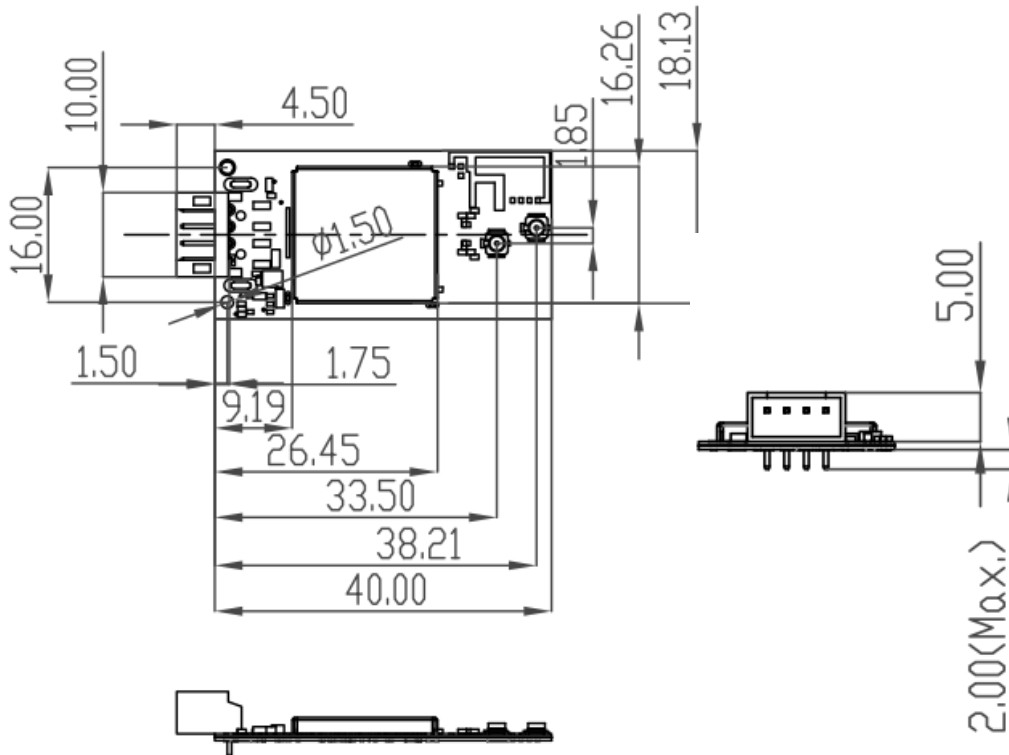
| Model Name            | Part Number | Description                                                                |
|-----------------------|-------------|----------------------------------------------------------------------------|
| WUBT-236ACN(BT) (M4W) | R9701830009 | 802.11ac/a/b/g/n 2T2R Wi-Fi + BT USB Module<br>(4-Pin Wafer + IPEX)        |
| WUBT-236ACN(BT) (P4W) | R9701830007 | 802.11ac/a/b/g/n 2T2R Wi-Fi + BT USB Module<br>(4-Pin Wafer + Printed Ant) |
| WUBT-236ACN(BT) (MU)  | R9701830008 | 802.11ac/a/b/g/n 2T2R Wi-Fi + BT USB Module<br>(USB Type A + IPEX)         |
| WUBT-236ACN(BT) (PU)  | R9701830006 | 802.11ac/a/b/g/n 2T2R Wi-Fi + BT USB Module<br>(USB Type A + Printed Ant)  |

**Mechanical Dimension (mm)**

**USB Type A: WUBT-236ACN(BT)(PU) / WUSB-236ACN(BT)(MU)**

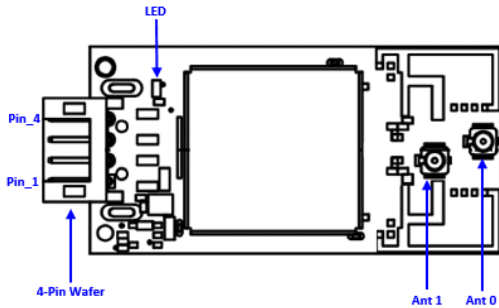


**Wafer Type: WUBT-236ACN(BT)(M4W) / WUBT-236ACN(BT)(P4W)**

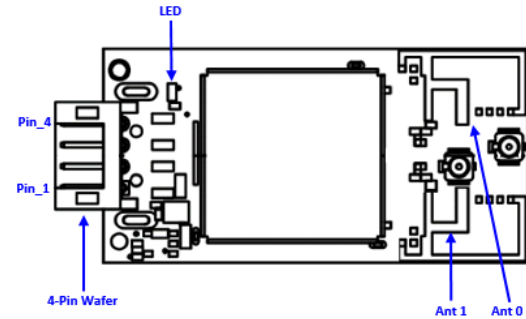


## Pin Define

**WUBT-236ACN(BT) (M4W)**

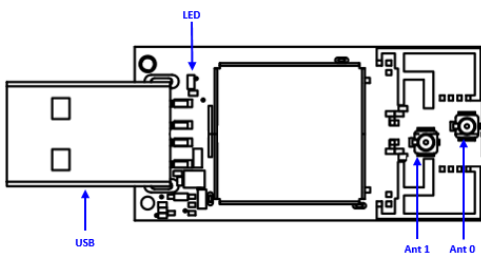


**WUBT-236ACN(BT) (P4W)**

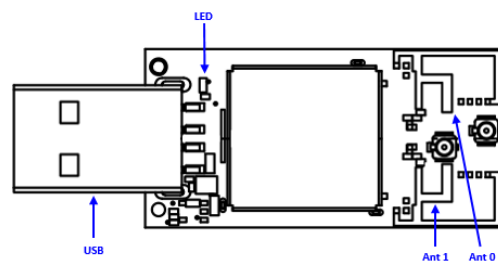


| Pin         | Description                                 |
|-------------|---------------------------------------------|
| Wafer Pin_1 | USB 5V                                      |
| Wafer Pin_2 | USB D-                                      |
| Wafer Pin_3 | USB D+                                      |
| Wafer Pin_4 | USB GND                                     |
| LED         | WiFi LED                                    |
| Ant_0       | RF Antenna for WiFi 2.4GHz/5GHz             |
| Ant_1       | RF Antenna for WiFi 2.4GHz/5GHz & Bluetooth |

**WUBT-236ACN(BT) (MU)**



**WUBT-236ACN(BT) (PU)**



| Pin   | Description                                 |
|-------|---------------------------------------------|
| USB   | USB Type-A connector for USB2.0             |
| LED   | WiFi LED                                    |
| Ant_0 | RF Antenna for WiFi 2.4GHz/5GHz             |
| Ant_1 | RF Antenna for WiFi 2.4GHz/5GHz & Bluetooth |

## 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 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.

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

FOR MOBILE DEVICE USAGE (>20cm/low power)

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.

This device is intended only for OEM integrators under the following conditions:

- 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) Module approval valid only when the module is installed in the tested host or compatible series of host which have similar RF exposure characteristic with equal or larger antenna separation distance.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE:** In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not 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 authorization.

#### End Product Labeling

##### FOR MOBILE DEVICE USAGE (>20cm/low power)

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: RYK-WUBT236ACNBT". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

#### Manual Information To the End User

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.

### **Industry Canada statement:**

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.

FOR MOBILE DEVICE USAGE (>20cm/low power)

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.

This device is intended only for OEM integrators under the following conditions: (For module device use)

- 1) The antenna must be installed and operated with greater than 20cm between the antenna and users
- 2) The transmitter module may not be co-located with any other transmitter or antenna.
- 3) Module approval valid only when the module is installed in the tested host or compatible series of host which have similar RF exposure characteristic with equal or larger antenna separation distance.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée et exploitée avec plus de 20 cm entre l'antenne et les utilisateurs
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.
- 3) Approbation du Module valable que lorsque le module est installé dans l'hôte testé ou de la série de l'hôte compatible qui ont même caractéristique de l'exposition aux RF avec la distance égale ou supérieure séparation antenne.

Tant que les 3 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

#### IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not 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 Canada authorization.



**NOTE IMPORTANTE:**

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

**End Product Labeling FOR MOBILE DEVICE USAGE (>20cm/low power)**

This transmitter module is authorized only for use in device where the antenna may be installed and operated with greater than 20cm between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 6158A-UBT236ACNBT".

**Plaque signalétique du produit final**

Ce module émetteur est autorisé uniquement pour une utilisation dans un appareil où l'antenne peut être installée et utilisée à plus de 20 cm entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 6158A-UBT236ACNBT".

**Manual Information To the End User**

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.

**Manuel d'information à l'utilisateur final**

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

**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; (detachable antenna only)
- (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;  
(detachable antenna only)

(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:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(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.;  
(detachable antenna only)

(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;  
(detachable antenna only)

(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

### **DETACHABLE ANTENNA USAGE**

This radio transmitter (IC: 6158A-UBT236ACNBT / Model: WUBT-236ACN(BT) [M4W]) 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: 6158A-UBT236ACNBT / Model: WUBT-236ACN(BT) [M4W]) 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.