User manual for Butlr wireless module

1. Product description

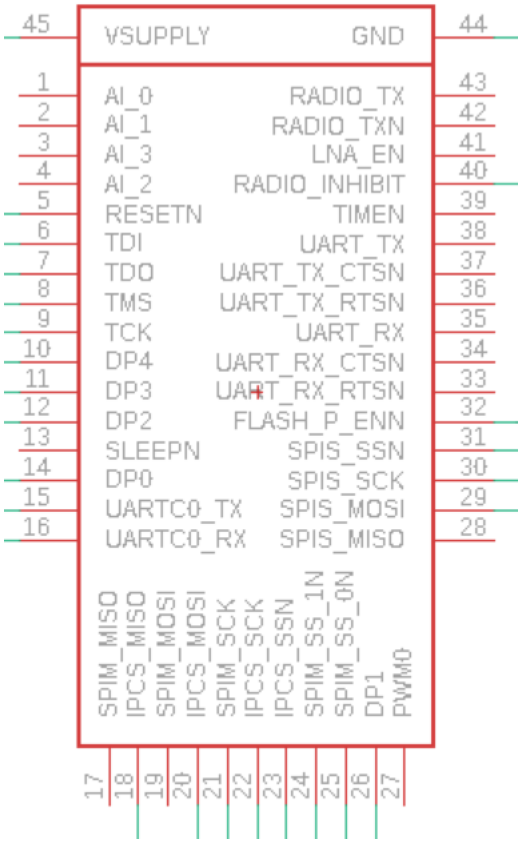
Butlr wireless module offers small space envelope, ultra-low power consumption wireless transmission functionality.

The module come with 2 orderable models: on-board ceramic antenna and external antenna with SMA connector. On-board antenna model is small in size, and can be used for IOT sensing in large distribution network. External antenna model offers flexible connection to a wide range of 2.4GHz antennas, enabling the product in long-range transmission scenarios.

Design of the wireless module is simple. The module come with shield for signal isolation and protection. The footprint of module is designed to be stamp-hole (mouse bit) type, so it's easy to do both SMT and through-hole soldering.

2. Pin definition

The module has 45 pins in total (including power and ground supplies). Detailed pin definition is shown in following picture:



3. Key specifications

- Supply Voltage : 3.3V
- Interface : USART / ADC / SPI / I2C
- Dimensions : 16 x 27.8 mm
- Industry leading Low Power Radio Technology

- Consume: 4.5mA to Receive a Packet
- PCBA module with PCB antenna or U.FL connector
- Integrated 2.4 GHz, IEEE 802.15.4e System-on-Chip, complete with Embedded SmartMesh Networking Software
- Serves as either a Wireless Mote, Embedded Manager, or Access Point Mote in a SmartMesh IP™ network depending on the loaded firmware

4. Certification declaration

ISED RSS Warning:
This device complies with Innovation, Science and Economic Development Canada Licence‐exempt RSS standard(s). Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
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) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
ISED RF exposure statement:
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be
co‐located or operating in conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.
Le rayonnement de la classe b repecte ISED fixaient un environnement non contrôlés.Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.
Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

This radio transmitter IC:27210-BWM01 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.
The module of B-WM-01-A has one chip antenna and the antenna gain is 1.0dBi,
The module of B-WM-01-B has one dipole antenna and the antenna gain is 2.0dBi.
The module of B-WM-01-C has one chip antenna and the antenna gain is 1.7dBi.
All the input impedance are 50Ohm.

Cet émetteur radio IC:27210-BWM01 a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antennes répertoriés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antenne non inclus dans cette liste qui ont un gain supérieur au gain maximum indiqué pour tout type répertorié sont strictement interdits pour une utilisation avec cet appareil.
Le module de B-WM-01-A a une antenne à puce et le gain d'antenne est de 1,0 dBi,
Le module de B-WM-01-B possède une antenne dipôle et le gain d'antenne est de 2,0 dBi.
Le module de B-WM-01-C a une antenne à puce et le gain d'antenne est de 1,7 dBi.
Toutes les impédances d'entrée sont de 50 Ohm.

IC Label Instructions:
The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: “Contains Transmitter Module IC:27210-BWM01”,or “Contains IC:27210-BWM01”. Any similar wording that expresses the same meaning may be used.
Instructions d'étiquetage IC: L'extérieur des produits finis contenant ce module doit afficher une étiquette faisant référence au module inclus. Cette étiquette extérieure peut utiliser des libellés tels que: "contient le module émetteur IC:27210-BWM01” ou "contient IC:27210-BWM01”, tout libellé similaire exprimant le même sens peut être utilisé.

OEM/Integrators Installation Manual

List of applicable FCC rules

This module has been tested and found to comply with part 15.247 requirements for Modular Approval.

Summarize the specific operational use conditions

This module can be applied in household electrical appliances as well as TV and IP camera. The input voltage to the module should be nominally 2.97-3.63 VDC ,typical value 3.3VDC and the ambient temperature of the module should not exceed 85℃.

Limited module procedures

N/A

Trace antenna designs

N/A

RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. If the device built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by § 2.1093. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

Antennas

The module of B-WM-01-A has one chip antenna and the antenna gain is 1.0dBi.
The module of B-WM-01-B has one dipole antenna and the antenna gain is 2.0dBi.
The module of B-WM-01-C has one chip antenna and the antenna gain is 1.7dBi.

Label and compliance information

When the module is installed in the host device, the FCC 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 Transmitter Module FCC ID:2AZPC-B-WM-01” or “Contains FCC ID:2AZPC-B-WM-01”.
The FCC ID can be used only when all FCC ID compliance requirements are met.

Information on test modes and additional testing requirements

a) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference have been corrected .

Additional testing, Part 15 Subpart B disclaimer

The final host / module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part15 digital device.

The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369. For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation. When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publiclyavailable drivers and turned on, so the transmitters are active. In certain conditions it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10 and ANSI C63.26 for further general testing details.

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.

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