

# User Manual

## 1. Introduction

AMPAK Technology would like to announce a low-cost and low-power consumption module which has all of the WiFi and Bluetooth functionalities. The highly integrated module makes the possibilities of web browsing, VoIP, Bluetooth headsets functional applications and other applications.

With seamless roaming capabilities and advanced security, also could interact with different vendors' 802.11b/g/n Access Points in the wireless LAN.

The wireless module complies with IEEE 802.11 b/g/n standard and it can achieve up to a speed of 72.2Mbps with single stream in 802.11n draft, 54Mbps as specified in IEEE 802.11g, or 11Mbps for IEEE 802.11b to connect to the wireless LAN. The integrated module provides SDIO interface for WiFi and UART / I2S / PCM interface for Bluetooth.

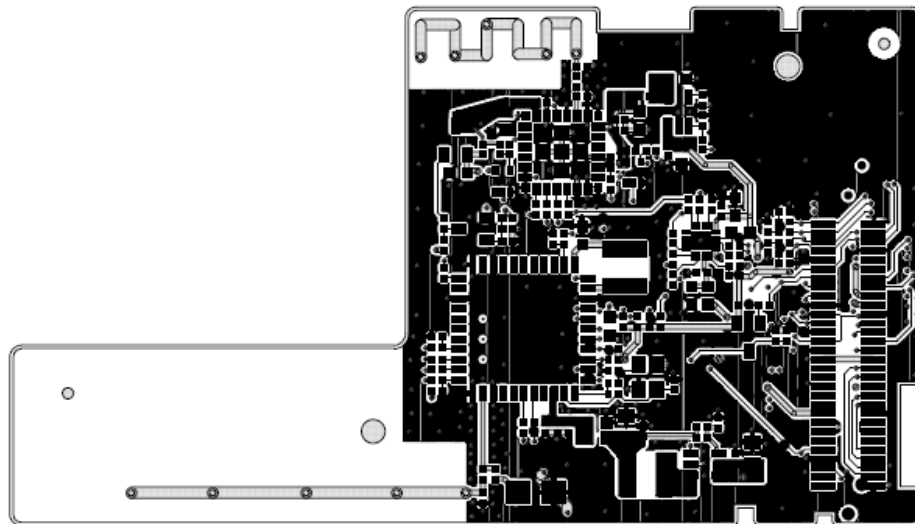
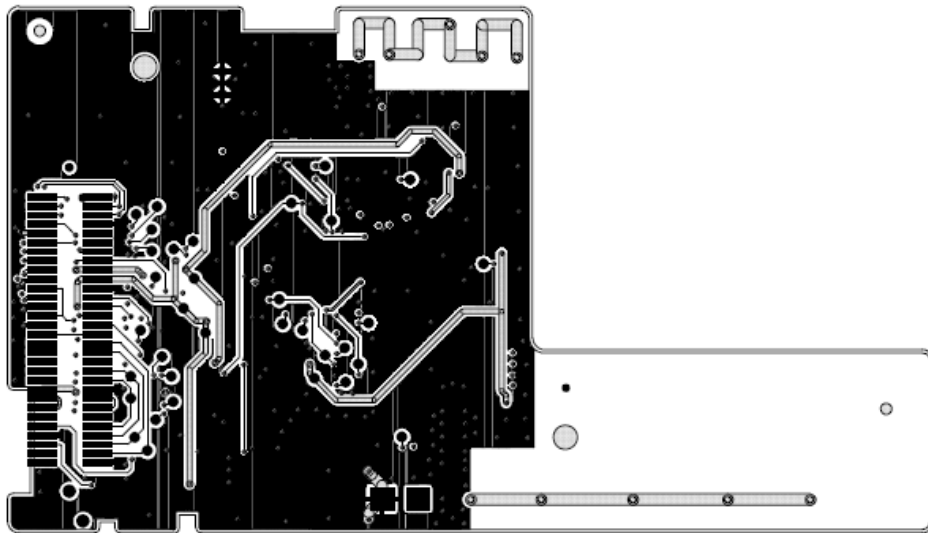
This compact module is a total solution for a combination of WiFi + BT technologies. The module is specifically developed for Smart phones and Portable devices

## 2. Features

- 802.11b/g/n single-band radio
- Bluetooth V4.0(HS) with integrated Class 1.5 PA and Low Energy (BLE) support
- Concurrent Bluetooth, and WLAN operation
- Simultaneous BT/WLAN receive with single antenna
- WLAN host interface options:
  - SDIO v2.0 — up to 50 MHz clock rate
- BT host digital interface:
  - UART (up to 4 Mbps)

- IEEE Co-existence technologies are integrated die solution
- ECI — enhanced coexistence support, ability to coordinate BT SCO transmissions around WLAN receives

### 3. PCB Layout



### 4. Deliverables

The following products and software will be part of the product.

- Module with packaging

- Evaluation Kits
- Software utility for integration, performance test.
- Product Datasheet.
- Agency certified pre-tested report with the adapter board.

## 5. General Specification

### 5.1 General Specification

Product Description: Support WiFi/Bluetooth

Dimension : L x W x H: 12 x 12 x 1.5 (typical) mm

WiFi Interface : SDIOV2.0

BT Interface : UART / PCM

Operating temperature : -30°C to 85°C

Storage temperature : -40°C to 85°C

Humidity : Operating Humidity 10% to 95% Non-Condensing

### 5.2 Voltages

#### 5.2.1 Absolute Maximum Ratings

Symbol	Description	Min.	Max.	Unit
V <sub>BAT</sub>	Input supply Voltage	-0.5	5.5	V
WL_VIO_SD	Digital/Bluetooth/SDIO/ I/O Voltage	-0.5	3.6	V

#### 5.2.2 Recommended Operating Rating

The module requires two power supplies: V<sub>BAT</sub> and V<sub>DDIO</sub>.

	Min.	Typ.	Max.	Unit
Operating Temperature	-30	25	85	deg.C
V <sub>BAT</sub>	3.0	3.6	4.8	V
V <sub>DDIO</sub>	1.7	3.3	3.6	V

### IMPORTANT NOTE:

This module has been granted as limited modular approval that is limited to that the specific host only. The host manufacturer is responsible to follow the instruction hereafter for the FCC/ISED compliance requirement of the end product. Under such configuration, the FCC/ISED radiation

exposure limits set forth for an population/uncontrolled environment can be satisfied.

The antenna is integrated into module, and the antenna type is monopole with antenna gain: 1.2 dBi.

## **USERS MANUAL OF THE END PRODUCT:**

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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 manufacturer could void the user's authority to operate this equipment.

## **LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following " Contains FCC ID: V5PMBW, Contains IC: 11689A-MBW". The following FCC part 15.19 statement has to also be available on the label:

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.

## **FCC Regulations:**

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 device 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 radiated 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.

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

## **RF Exposure Information**

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

## **ISED Notice**

This device complies with Innovation, Science and Economic Development Canada license-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 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, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## **ISED Exposure Information**

This device complies with radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Cet appareil est conforme aux limites d'exposition aux rayonnements de la CNR-102 définies pour un environnement non contrôlé. Afin d'éviter la possibilité de dépasser les limites d'exposition aux fréquences radio de la CNR-102, la proximité humaine à l'antenne ne doit pas être inférieure à 20 cm (8 pouces) pendant le fonctionnement normal.