

MODULE OF BT534582

BT534582

Specification

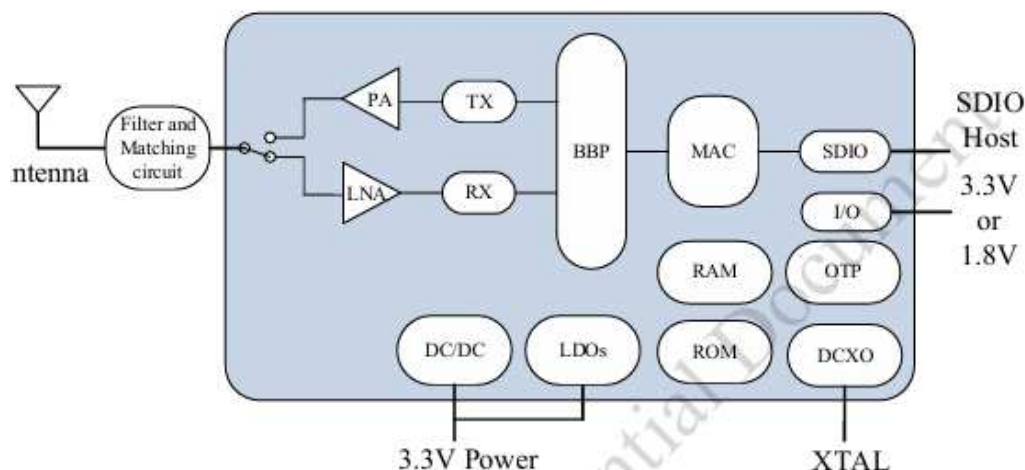
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|--|-----------------|-----------------------|
| File status : <input type="checkbox"/> Draft <input checked="" type="checkbox"/> Published <input type="checkbox"/> Pending | File name : | Product specification |
| | Version : | V1.2 |
| | Editor : | Henry Ho |
| | Finished date : | 2025-1-3 |

| Version | Editor | Participator | Valid from | Remark |
|---------|----------|--------------|------------|--------|
| V1.2 | Henry Ho | | 2025-1-3 | |

0 Amendment

1 General Description

AB6062S4FB-44PCL series module is a highly integrated 802.11b/g/n/ax Wireless LAN (WLAN) 20/MHz bandwidth 1T1R device with SDIO interface (SDIO 2.0 compliant) and BLE 5.0, based on AltoBeam's ATBM6062 S4FB Wi-Fi6 chip.



2 Feature

| | | |
|----------------|----------------------|--|
| Main chipset | | AltoBeam ATBM6062-S4FB |
| Wi-Fi | Operating frequency | 2.412 ~ 2.484 GHz |
| | Wi-Fi Standard | IEEE 802.11b/g/n/ax 1T1R |
| | Modulation | 802.11b: CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps) 802.11g/n/ax: OFDM |
| | Bandwidth | 802.11b/g/n/ax 20MHz: ≤20MHz 802.11n/ax 40MHz: ≤40MHz |
| | PHY data rates | 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0-7, up to 150Mbps 802.11ax: MCS0-11, up to 286.8Mbps |
| | Receiver sensitivity | 802.11b 1Mbps: -97.5dBm; 802.11b 11Mbps: -90.0dBm; 802.11g 6Mbps: -93.5dBm; 802.11g 54Mbps: -76.5dBm; 802.11n MCS7 HT20: -74.0dBm; 802.11n MCS7 HT40: -71.0dBm 802.11ax MCS11 HE20: -64.0dBm; 802.11ax MCS11 HE40: -60.5dBm |
| | Max. output power | 802.11b 1Mbps: 19dBm; 802.11b 11Mbps: 19dBm; 802.11g 6Mbps: 18dBm; 802.11g 54Mbps: 16dBm; 802.11n HT20 MCS7: 16dBm; 802.11n HT40 MCS7: 16dBm; 802.11ax HT20 MCS11: 13dBm; 802.11ax HT40 MCS11: 13dBm |
| | Max. input power | -10dBm |
| Bluetooth | Frequency range | 2.402 ~ 2.480 GHz |
| | Standard | BLE v4.2/5.0 |
| | PHY data rates | 1Mbps, 2Mbps |
| | Max. output power | Max. 14dBm (class 1) |
| Host interface | | SDIO 2.0 |

| | |
|-----------------------|---|
| Operation range | More than 150 meters in open space |
| RF antenna | External antenna (2.4GHz 50Ohm Resistance) |
| Security | WPA, WPA2, WPA3 personal |
| Power consumption | 3.3VDC Max.320mA |
| Operating temperature | -20 ~ +70°C ambient temperature |
| Storage temperature | -50~ +125°C ambient temperature |
| Humidity | 5% to 90% maximum (non-condensing) |
| Dimension | Typical L12.00*W12.00*H1.90mm (±0.2mm) Note: The thickness of module with shield case is 2.35±0.2mm. |

3 Specification

3.1 Wi-Fi RF Performance

3.1.1 Output power

| Mode | Data Rate | Unit | Channel 1 | | Channel 6 | | Channel 13 | |
|----------|------------|------|-----------|-----|-----------|-----|------------|-----|
| | | | TYP | MAX | TYP | MAX | TYP | MAX |
| 802.11b | 1Mbps | dBm | 18 | 19 | 18 | 19 | 18 | 19 |
| | 11Mbps | | 18 | 19 | 18 | 19 | 18 | 19 |
| 802.11g | 6Mbps | | 17 | 18 | 17 | 18 | 17 | 18 |
| | 54Mbps | | 15 | 16 | 15 | 16 | 15 | 16 |
| 802.11n | MCS7_HT20 | | 14 | 16 | 14 | 16 | 14 | 16 |
| | MCS7_HT40 | | 14 | 16 | 14 | 16 | 14 | 16 |
| 802.11ax | MCS0_HE20 | | 17 | 18 | 17 | 18 | 17 | 18 |
| | MCS0_HE40 | | 17 | 18 | 17 | 18 | 17 | 18 |
| | MCS11_HE20 | | 13 | 13 | 13 | 13 | 13 | 13 |
| | MCS11_HE40 | | 13 | 13 | 13 | 13 | 13 | 13 |

Note: Max. output power is tested with spectral mask and EVM compliance.

3.1.2 EVM for Max. output power

| Mode | Data Rate | Unit | Channel 1 | Channel 6 | Channel 13 |
|----------|------------|------|-----------|-----------|------------|
| 802.11b | 1Mbps | dB | -25 | -25 | -25 |
| | 11Mbps | | -25 | -25 | -25 |
| 802.11g | 6Mbps | | -25 | -25 | -25 |
| | 54Mbps | | -30 | -30 | -30 |
| 802.11n | MCS7_HT20 | | -30 | -30 | -30 |
| | MCS7_HT40 | | -30 | -30 | -30 |
| 802.11ax | MCS0_HE20 | | -25 | -25 | -25 |
| | MCS0_HE40 | | -25 | -25 | -25 |
| | MCS11_HE20 | | -35 | -35 | -35 |
| | MCS11_HE40 | | -35 | -35 | -35 |

3.1.3 Center frequency tolerance

| Mode | Data Rate | Unit | MIN | TYP | MAX |
|----------|-----------|------|-----|-----|-----|
| 802.11b | 11Mbps | ppm | -10 | | +10 |
| 802.11g | 54Mbps | | -10 | | +10 |
| 802.11n | MCS7 | | -10 | | +10 |
| 802.11ax | MCS11 | | -10 | | +10 |

3.1.4 Receiver sensitivity

| Mode | Data Rate | Unit | Channel 1 | Channel 6 | Channel 13 |
|----------|------------|------|-----------|-----------|------------|
| 802.11b | 1Mbps | dBm | -97.5 | -97.5 | -97.5 |
| | 11Mbps | | -90.0 | -90.0 | -90.0 |
| 802.11g | 6Mbps | | -93.5 | -93.5 | -93.5 |
| | 54Mbps | | -76.5 | -76.5 | -76.5 |
| 802.11n | MCS7_HT20 | | -74.0 | -74.0 | -74.0 |
| | MCS7_HT40 | | -71.0 | -71.0 | -71.0 |
| 802.11ax | MCS11_HE20 | | -64.0 | -64.0 | -64.0 |
| | MCS11_HE40 | | -60.5 | -60.5 | -60.5 |

4 Drawing

4.1 Mechanical Specifications

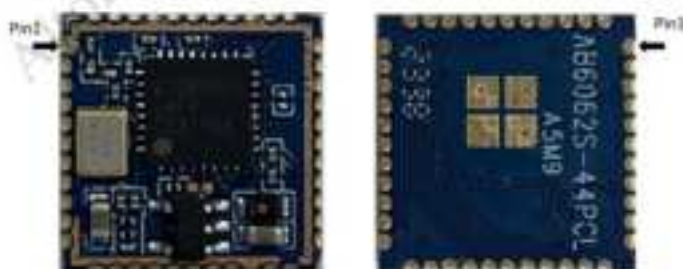
4.1.1 Outline drawing

The typical size of module is L12.00*W12.00*H1.90mm (± 0.2 mm).

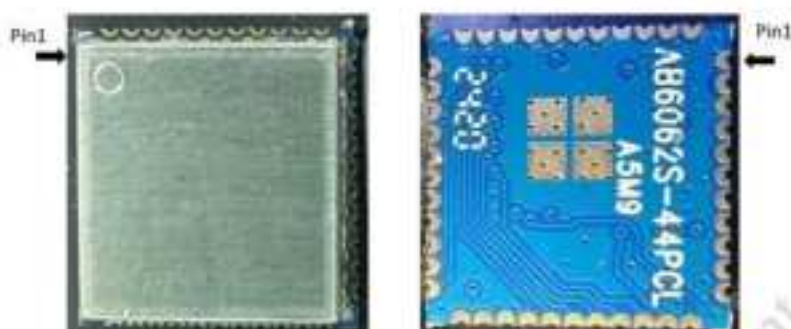
Note: The thickness of module with shield case is 2.35 ± 0.2 mm



Outline drawing (Top View)



AB6062S-44PCL module appearance



AB6062S4FB-44PCL module with shield case appearance

4.1.2 Pin definition

| Pin # | Pin name | Description |
|-------|-----------|---|
| 1 | GND | GND |
| 2 | RF_ANT | Connect Wi-Fi and BLE antenna (2.4GHz 50ohm) |
| 3 | GND | GND |
| 4 | NC | |
| 5 | NC | |
| 6 | NC | |
| 7 | NC | |
| 8 | NC | |
| 9 | VDD | 3.3V power supply |
| 10 | NC | |
| 11 | NC | |
| 12 | CS | Hardware reset pin, low active |
| 13 | WAKE_HOST | Wi-Fi wakes up host MCU |
| 14 | SDIO_DAT2 | SDIO data 2 |
| 15 | SDIO_DAT3 | SDIO data 3 |
| 16 | SDIO_CMD | SDIO command |
| 17 | SDIO_CLK | SDIO clock |
| 18 | SDIO_DAT0 | SDIO data 0 |
| 19 | SDIO_DAT1 | SDIO data 1 |
| 20 | GND | GND |
| 21 | NC | |
| 22 | VDDIO | 1.8V or 3.3V I/O power supply |
| 23 | NC | GPIO0/I2C SDA for debug and module test, left it floating |
| 24 | NC | GPIO1/I2C SCL for debug and module test, left it floating |
| 25 | NC | |
| 26 | NC | |

| Pin # | Pin name | Description |
|-------|----------|-------------|
| 27 | NC | |
| 28 | NC | |
| 29 | NC | |
| 30 | NC | |
| 31 | GND | GND |
| 32 | NC | |
| 33 | GND | GND |
| 34 | NC | |
| 35 | NC | |
| 36 | GND | GND |
| 37 | NC | |
| 38 | NC | |
| 39 | NC | |
| 40 | NC | |
| 41 | GND | GND |
| 42 | NC | |
| 43 | NC | |
| 44 | NC | |

5 Remark

5.1 Storage Temperature and Humidity

The calculated shelf life in sealed bag is 12 months if stored between 0°C and 40°C at less than 90% relative humidity (RH). After the bag is opened, devices that are subjected to solder reflow or other high temperature processes must be handled in the following manner:

- a) Mounted within 168-hours of factory conditions < 30 °C /60%RH
- b) Storage humidity needs to maintained at <10% RH
- c) Baking is necessary if customer exposes the component to air over 168 hours, baking condition: 125°C / 8hours

FCC Information

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.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or change to this equipment. Such modifications or change could void the user's authority to operate the equipment.

Note: 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.

RF Exposure Information:

This equipment complies with FCC RF 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 during normal operation.

This module is for internal use only and not sold outside.

Antenna Information

It is 2.4GHz 3216 chip antenna, model 3216X02.

Additional testing, Part 15 Subpart B disclaimer: The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) list on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.

The modular must be installed in the host that assign by

Company name: Winplus Co., Ltd.

Product/PMN: 3WAY Dashcam Module

Model no./HVIN: BT534582

The Class II permissive changes is required for each specific host installation

Class II Permissive Change (C2PC) Test Plan for Host Devices

Test plan for Class II Permissive Changes (C2PC) on FCC ID: WUI-AICAM3WAY

- 1) Output power. (FCC Part 15.247(b))
- 2) Output Power Spectral Density. (FCC Part 15.247(e))
- 3) AC Conducted Emission. (FCC Part 15.207)
- 4) Radiated Emission (FCC Part 15.205/209, FCC Part 15.247(d))
- 5) Host cannot change the RF Exposure use conditions. If use conditions is changed the separate approval shall be required.

Note:

1. These tests be based on C63.10 and FCC Part 15.247 as guidance, according to the operating frequency High, mid and low channel test.
2. For these tests, all modes (IEEE 802.11b, IEEE 802.11g, IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ax-HE20, IEEE 802.11ax-HE40) need to be tested.

IC Information

-English:

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s).

Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with IC 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.

-French:

Cet appareil contient un ou des émetteurs/récepteurs exempts de licence conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada.

Le fonctionnement est soumis aux deux conditions suivantes :

- Cet appareil ne doit pas provoquer d'interférences.
- Cet appareil doit accepter toutes les interférences, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

BT534582

3WAY Dashcam Module

Responsible Party:

Horizon Brands

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