

AEH-W4G2 Specification

1: General Description

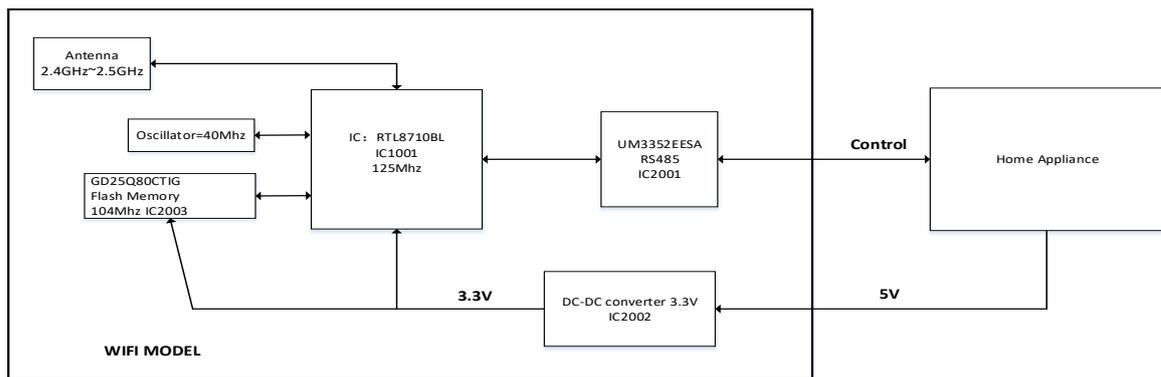
The wireless module complies with IEEE 802.11 b/g/n standard and it can achieve up to a speed of 150Mbps with single stream in 802.11n draft 7.0, 54Mbps as specified in IEEE 802.11g, or 11Mbps for IEEE 802.11b to connect to the wireless LAN.

This compact module is a total solution for a combination of Wi-Fi 802.11b/g/n technologies with Microcontroller Processor. The module is specifically developed for embedded system devices.

2: Module Hardware Overview

2.1 Block Diagram

The general Hardware architecture is shown below Figure:



Block Diagram

2.2 Feature

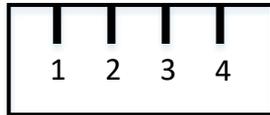
- ◆ Single-band 2.4GHz IEEE 802.11b/g/n
- ◆ Combines an ARM CM4 MCU,WLAN MAC,a 1T1R capable WLAN baseband,and RF in a single chip.
- ◆ Lead-Free / RoHS
- ◆ Single power supply voltage 5V

1.3 Interface

- ◆ Interface

- JST-4 connector

◆ Pin definition



Pin number	Pin name	Pin description
1	5V	5.0V Power
2	RS485A+	Communication line positive
3	RS485B-	Communication line negative
4	GND	Ground pad

3. WiFi RF Specification

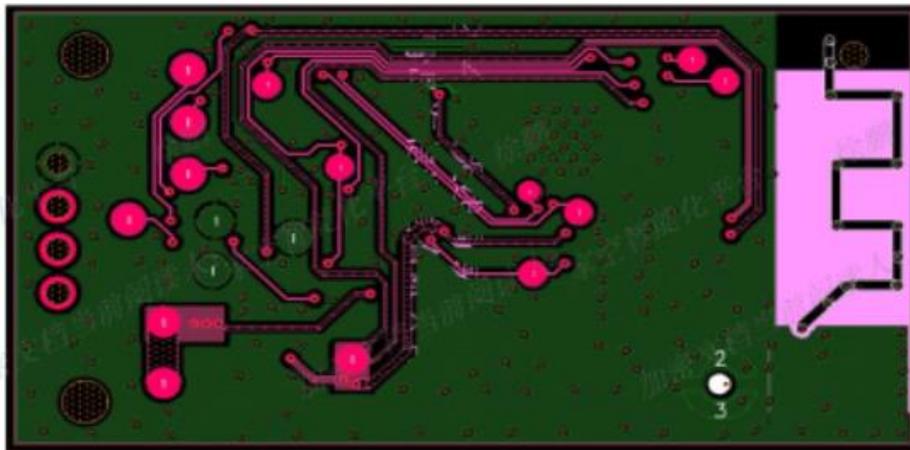
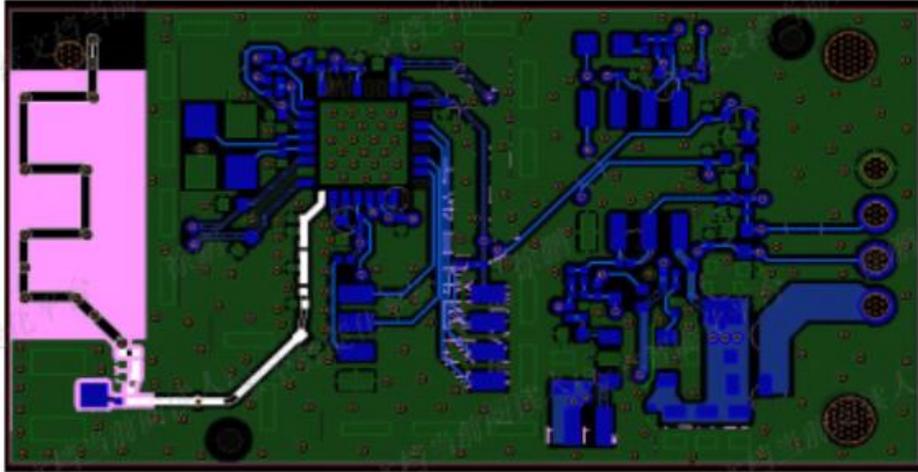
RF Specification

Feature Description	Feature Description
WLAN Standard	IEEE 802.11b/g/n(HT20/HT40), WiFi compliant
Frequency Range	2.412GHz~2.462GHz for FCC and ICES 2.412GHz~2.472GHz for Europe.
Number of Channels	CH1~CH11 for FCC and ICES, Shield 12,13 Channels with Software. CH1~CH13 for Europe.
Modulation	802.11b : CCK, DQPSK, DBPSK
	802.11 g/n : OFDM /64-QAM,16-QAM, QPSK, BPSK
Output Power	≤12dBm for FCC And ICES ≤19dBm for Europe
Data Rate	802.11b : 1, 2, 5.5, 11Mbps
	802.11g : 6, 9, 12, 18, 24, 36, 48, 54Mbps
	802.11n(HT20): 6.5, 13, 19.5, 26, 39, 52, 58.5, 65,72.2Mbps
	802.11n(HT40): up to 150Mbps
Antenna Reference	Internal Printed ANT :Small antennas with 1.0 dBi peak gain

4. Mechanical Specifications

PCB Assembly Dimension:

- ◆ Dimension (L x W) : L:40.0mm*W:20.0mm



5. Requirement of FCC KDB 996369 D03 for module certification:

5.1 List of applicable FCC rules and Canada rules:

The module complies with FCC Part 15.247, and Canada RSS-247.

5.2 Summarize the specific operational use conditions:

The module has been certified for Fix/Mobile applications. The host product operating conditions must be such that there is a minimum separation distance of 20 cm (or possibly greater than 20 cm) between the antenna radiating structures and nearby persons. The host manufacturer is obligated to confirm the use conditions of the host product to ensure that distance specified in the instructions is met. In this case the host product is classified as either a mobile device or a fixed device for RF exposure purposes. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

5.3 Limited module procedures:

Not applicable.

5.4 Trace antenna designs:

Not applicable.

5.5 RF exposure considerations:

This equipment complies with FCC's and IC's RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must be installed and operated to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter. Installers must ensure that 20cm separation distance will be maintained between the device and users.

DÉCLARATION D'IC SUR L'EXPOSITION AUX RADIATIONS:

Cet appareil est conforme aux limites d'exposition au rayonnement RF stipulées par la FCC et l'IC pour une utilisation dans un environnement non contrôlé. Les antennes utilisées pour cet émetteur doivent être installées et doivent fonctionner à au moins 20 cm de distance des utilisateurs et ne doivent pas être placées près d'autres antennes ou émetteurs ou fonctionner avec ceux-ci. Les installateurs doivent s'assurer qu'une distance de 20 cm sépare l'appareil des utilisateurs.

Note: the OEM product manuals must include a statement in order to alert the users of FCC RF exposure compliance.

5.6 Antennas:

Type	Gain	Impedance	Application	Min Separation
PCB type Antenna	1.0 dBi	50 Ω	Fixed	20 cm

The antenna is permanently attached, can't be replaced.

5.7 Label and compliance 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.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

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.

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.

ISED statements:

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 CNRD 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.

The system integrator must place an exterior label on the outside of the final product housing the AEH-W4G2 Modules. Below is the contents that must be included on this label.

OEM Labeling Requirements:

NOTICE: The OEM must make sure that FCC labeling requirements are met. This includes a clearly visible exterior label on the outside of the final product housing that displays the contents shown in below:

Model : AEH-W4G2
Contains FCC ID: 2AGCCA EH-W4G2
Contains IC : 20778-AEHW4G2

5.8 Information on test modes and additional testing requirements:

When testing host product, the host manufacture should follow FCC KDB Publication 996369 D04 Module Integration Guide for testing the host products. The host manufacturer may operate their product during the measurements. In setting up the configurations, if the pairing and call box options for testing does not work, then the host product manufacturer should coordinate with the module manufacturer for access to test mode software. For wireless LAN, the product under test is set into a link/association with a partnering WLAN device, as per the normal intended use of the product. To ease testing, the product under test is set to transmit at a high duty cycle, such as by sending a file or streaming some media content. Alternatively, a Wi-Fi test set may be used. Simultaneously transmitting modules installed in the host should be all active.

5.9 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