MSWXB2518
WiFi 6 And BLE Combo Module Data Sheet

MSWXB2518 is a low-powered WiFi 6 and BLE combo module which embedded Wi-Fi 2.4GHz and 5GHz Dual Band and BLE 5.4 launched by MoreSense.

Revision History

| Version	Description	Release Date
V1.0	Initial Version	2024-7-22

Catalog

1 Product Description

MSWXB2518 is a cost-effective 2.4G/5G WiFi&BT serial pass-through module with low power consumption, which enables serial devices to access wireless network. MSWXB2518 adopts Cortex-M4F architecture with up to 480MHz main frequency, 992KB RAM, 4MB Flash.

MSWXB2518 Support WiFi802.11b/g/n/ac/ax and BLE5.4 protocols, and the embedded firmware integrates network protocols, web pages, OTA, and AT instruction sets.

MSWXB2518 is widely used in smart home, smart home appliances, smart security, photovoltaic energy storage and other IOT small data transmission field.
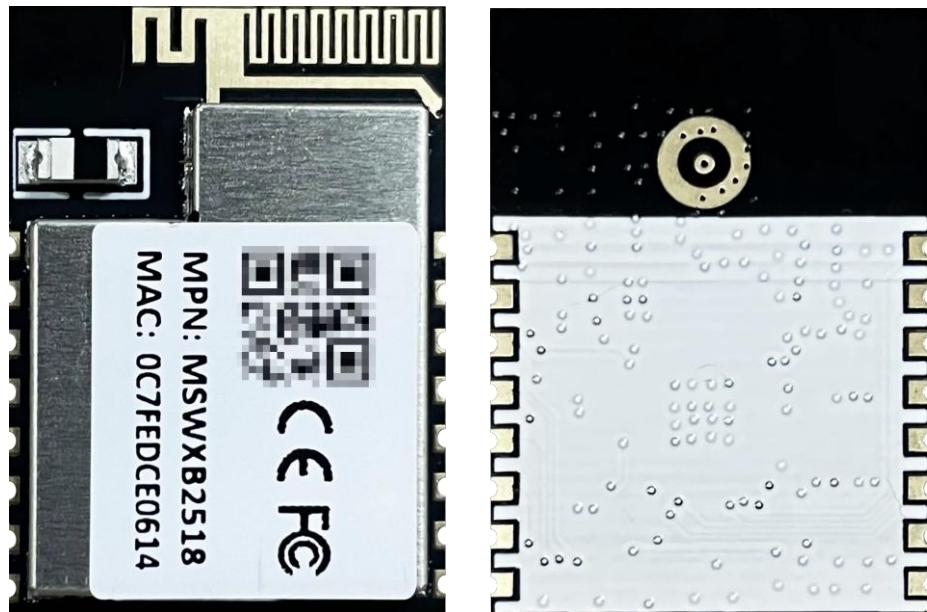
2 System Block Diagram
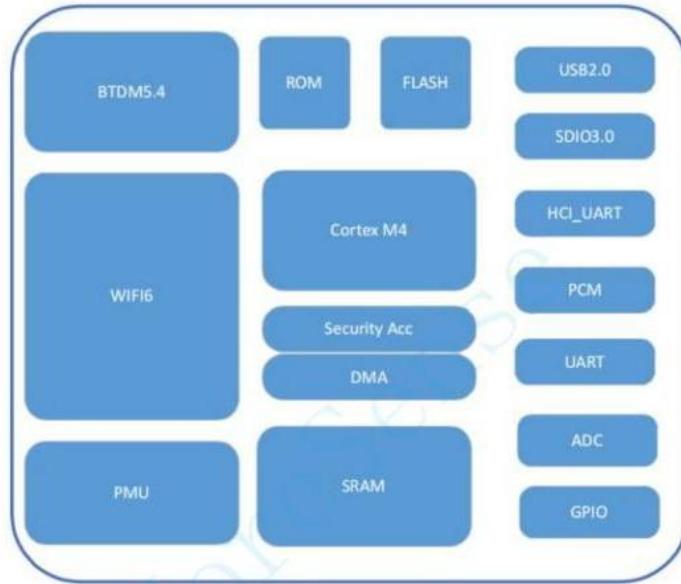
3 Product Feature

* Support 802.11 b/g/n/ax and BLE 5.4 wireless standards,also support 2.4GHz and

5GHz dual-band operation

* Support the UART data communication interface.

* Support STA/AP working mode.

* Support SoftAP mode and AP distribution network,BLE distribution network

function.

* Can distinguish power-on reset and watchdog reset

* Support wireless and remote firmware upgrade.

* Can provide SDK development kit to support secondary development;.

* Adopts Cortex-M4F architecture, main frequency up to 480MHz; 992KB RAM;

* Embedded flash 4M.

4 Application

-Smart Home: Smart Lighting, Smart Buttons, Smart Sockets, Indoor Positioning

-Industrial Automation: Industrial Robots, Mesh Networking, Human-Machine Interface, Industrial Bus Applications

-Healthcare: Health Monitoring, Baby Monitor

-Smart Agriculture: Smart Greenhouse, Smart Irrigation, Agricultural Machines

-Consumer Electronics: Smart Watches, Smart Bracelets -Ott Tv Boxes, Set-Top Box Devices -Wi-Fi And Bluetooth Speakers,Toys With Data Upload Function And Proximity Sensing Toys

-Retail F&B: Pos Systems, Service Robots, Cloud Printers

-Universal Low-Power Iot Data Loggers

5 Module Parameter

Type	Parameter	Value
WiFi Parameter	Certification Standards	FCC/CE/SRRC/RoHS
	Wireless Protocol	802.11 b/g/n/ac/ax
	Frequency Range	2.412GHz-2.462GHz 5.180GHz-5.825GHz

	2.4G Transmitting Power	802.11b: <14dBm(@11Mbps)
		802.11g: <12dBm(@54Mbps)
		802.11n: <12dBm(@HT20， MCS7)
	5.8G Transmitting Power	HT20 MCS7:<11dbm
	2.4G Receive Sensitivity	802.11b: -97dBm (@11Mbps ， CCK)
		802.11g: -75dBm (@54Mbps， OFDM)
		802.11n: -69dBm (@HT20， MCS7)
	5G Receiving Sensitivity	-93.5dBm (6Mbps ,OFDM)
	Antenna	MSWXB2518: Built-in Antenna Interface External Antenna IPEX Interface
BLE Parameter	Wireless Protocol	BLE5.4
	Frequency Range	2.4GHz:2400-2483.5MHz
	Transmitting Power	＜1dbm
	Receiving Sensitivity	-90dBm
BT Parameter	Wireless Protocol	GFSK, π/4-DQPSK, 8-DPSK
	Frequency Range	2.4GHz:2400-2483.5MHz
	Transmitting Power	＜1dbm
	Receiving Sensitivity	-90dBm
Hardware Parameter	Data Interface	GPIO Or UART
	Operating Voltage	2.8~3.6V
	Operating Current	Peak (continuous transmission): 260mA Average (STA, connected standby): 44mA Average (STA, 1KB/s): 44mA Average (AP): 85mA
	Operating Temperature	-40℃ *85℃
	Storage Temperature	-40℃ *125℃
	Humidity	<85%

	Dimension	MSWXB2522： 25mm x 18mm x 3mm
Software Parameter	Wireless Network Type	STA/AP/AP+STA/BLE5.4
	Security Mechanism	WEP/WPA-PSK/WPA2-PSK/WPA3-PSK
	Encryption Type	WEP64/WEP128/TKIP/AES
	Firmware Upgrading	Local-Wireless Remote-Upgrade
	Customization	Provide SDK for customer's 2nd development
	Network Protocol	IPv4,TCP/UDP/HTTP/MQTT
	User Configuration	AT+ Instruction Set, Web Page Android/iOS Terminal BLE/AP Configuration APP

6 Pin Definition
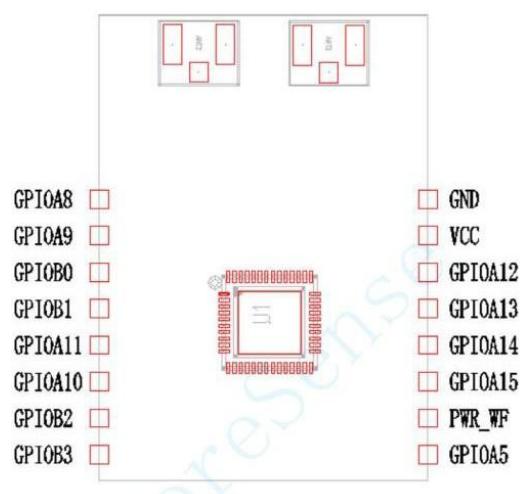
Table 1. MSWXB2518 Pin Function Definition

Pin	Name	Type	Description
1	GPIOA8	I/O/T	No Used-NC
2	GPIOA9	I/O/T	No Used-NC
3	GPIOB0	I/O/T	No Used-NC
4	GPIOB1	I/O/T	No Used-NC
5	UART0	O	3.3V UART0 Output GPIOA11
6	UART0	I	3.3V UART0 Input GPIOA10
7	GPIOB2	I/O/T	No Used-NC
8	GPIOB3	I/O/T	No Used-NC
9	GPIOA5	I/O/T	No Used-NC
10	PWR_WF		Low Active Hardware Reset Input Pin
11	GPIOA15	I/O/T	No Used-NC
12	GPIOA14	I/O/T	No Used-NC
13	GPIOA13	I/O/T	No Used-NC
14	GPIOA12	I/O/T	No Used-NC
15	VCC		Power Supply
15	GND		Ground

Note: I:Input   O:Out   T:High impedance state

7 Module Dimension
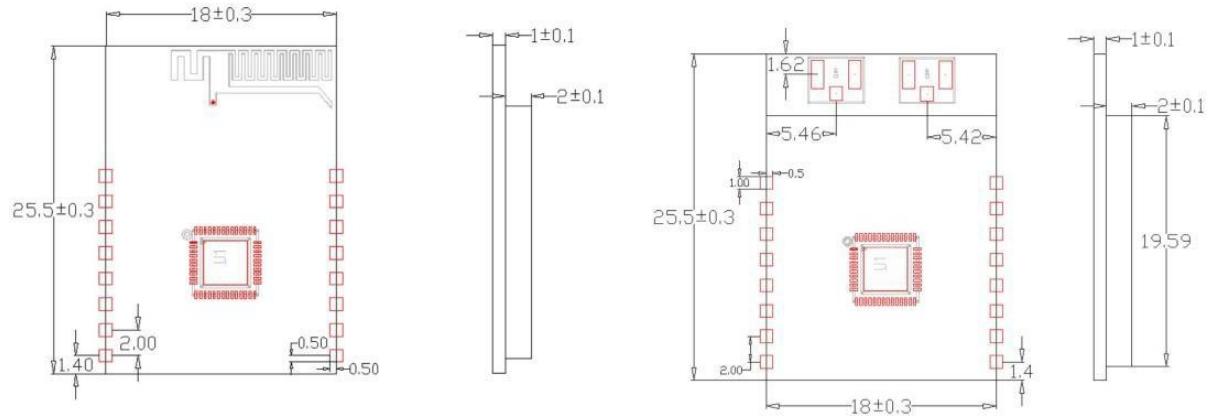
Unit: Millimeter (mm)

8 Name Rule
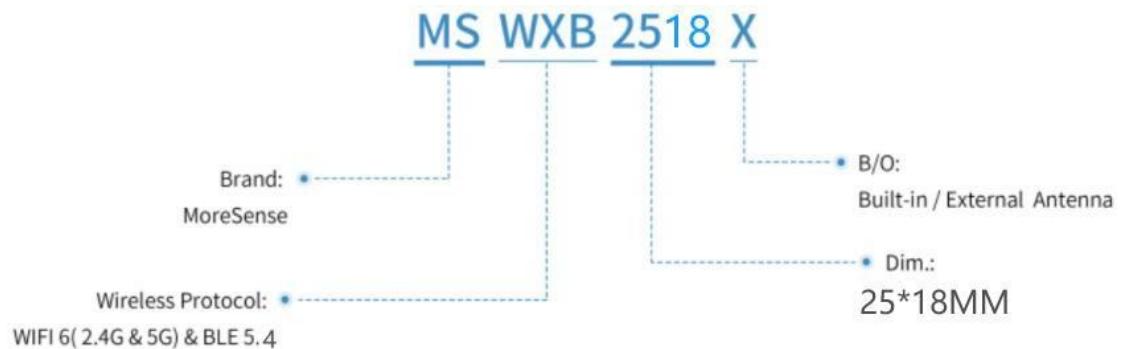
9 Precautions

MSWXB2518 Support built-in antenna option.When customers choose the built-in antenna,they need to follow the general rules for antenna placement and module placement:

The area on the user's PCB that corresponds to the bar area above (MSWXB2518: 25x18mm) cannot be used for placing components and GND. The area corresponding to the striped area (MSWXB2518: 25x18mm) on the user's PCB can not be used for components and GND;

The antenna must be kept away from metal,at least 10 mm from surrounding components with high height;

The antenna part cannot be blocked by the metal housing,and the plastic housing needs to be at least 10 mm away from the antenna;

The MSWXB2518 module is recommended to be placed in the following areas of the user board to minimize the impact on the antenna and wireless signal, and please consult our technical support staff to assist in the placement of the module and the layout design of the relevant area.
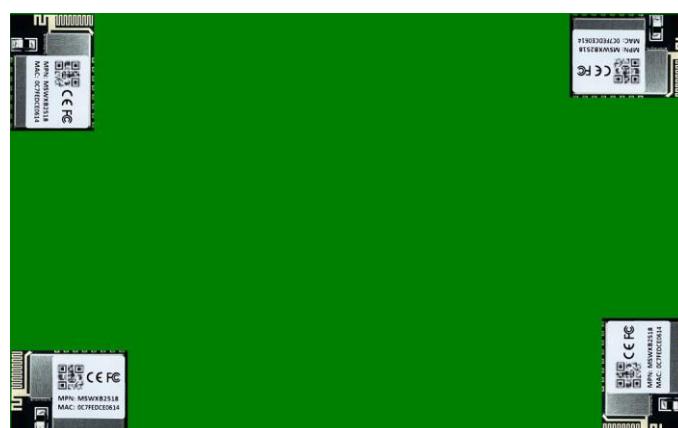
10 Typical Application Circuits
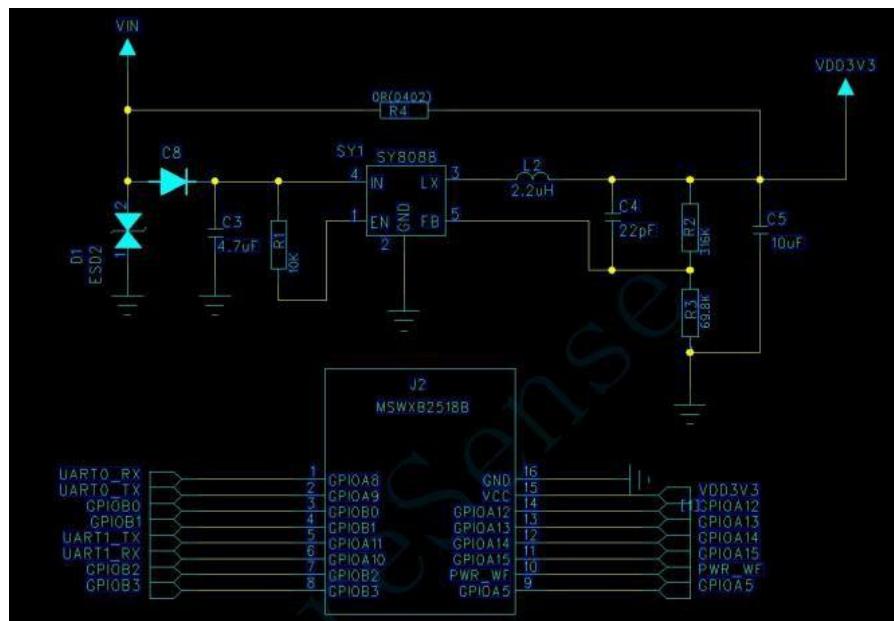
11 Production Patch Instructions

11.1 Recommended Reflow Temperature Profile

Figure 1.Thermal Reflow Profile
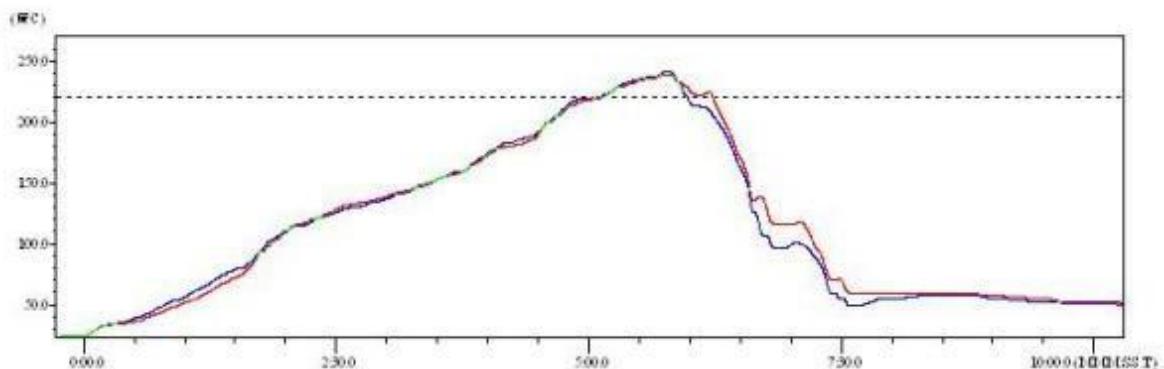
Table 1.Reflow Data

No.	Program	Temp. (℃)	Time(S)
1	Re-fluxing Time	Above 220℃	35~55S
2	Peak Temp.	Highest 260℃	

 Note :

1.It is recommended to use a nitrogen re-flux furnace;
2.The oxygen content is less than 300ppm.

11.2 Operating Instructions

A. Sealed storage period:12 months in an environment with a temperature of less than 30 °

and a relative humidity of less than 60%.

B. Be re-baked before using if the window time exceeds 168 hours after unpacking.

C. Recommended to use nitrogen filling method for baking.

D. Recommended to use nitrogen filling method.

E. Baking and rework requirements for this model:125±5℃, 24 hours.

F. Recommended storage conditions ≦10%,relative humidity under vacuum packaging.

G. If the SMT process requires to pass twice reflow ovens:

① TOP Surface② BOT Surface

Situation 1:The WIFI module is designed on the TOP surface of the customer's PCB.The the

TOP surface needs to be baked when the TOP surface has not been produced after the BOT surface

has been finished 168 hours (window time).

Situation 2;The WIFI module is designed   on the BOT   side of the   customer's PCB and

follows the normal baking rules.

Note:The window time means 168 hours from the end of the last baking to the beginning of the next reflow.

12 Module parameter content description

12.1 List of applicable FCC rules

The AIC8800M40B is an 802.11a/b/g/n/ac/ax 573.5Mbps WLAN + BT v5.4 Combo SDIO Module. It is within U.S. FCC part 15.247,15.407 standard

12.2 Specific operational use conditions The EUT is a 802.11a/b/g/n/ac/ax 573.5Mbps WLAN + BT v5.4 Combo SDIO Module Operation Frequency: 2402-2480MHz for BT; 2412-2462MHz for WIFI 2.4G, 5150-5250/5250MHz~5350MHz/5470MHz~5725MHz/ 5725-5850MHz/ for WIFI 5G

Modulation Type: GFSK, π/4-DQPSK, 8-DPSK for BT, GFSK for BLE,WLAN(DSSS/OFDM/OFDMA)

12.3 Limited module procedures

Not applicable; Single Modular Approval Request

12.4 Trace antenna designs

The AIC8800M40B is an 802.11a/b/g/n/ac/ax 573.5Mbps WLAN + BT v5.4 Combo SDIO Module beams signals and communicates with its antenna, which is PCB Antenna and Ceramic antenna

12.5 RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

12.6Antennas

The AIC8800M40B is an 802.11a/b/g/n/ac/ax 573.5Mbps WLAN + BT v5.4 Combo SDIO Module beams signals and communicates with its antenna, which is PCB Antenna and Ceramic

antenna.

The antenna is an internal one. Users are not allowed to replace it privately

Antenna Designation:
BT: Ceramic antenna, WIFI 2.4G/5G: PCB Antenna
Antenna Gain: BT: 1.5dBi, WIFI 2.4G/5G: 1.5dBi

12.7 Label and compliance information

The final end product must be label in a visible area , the Host must Contains FCC ID:2A86J-MSWXB2518.

12.8 Information on test modes and additional testing requirements

Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

12.9 Additional testing, Part 15 Subpart B disclaimer

The module without unintentional-radiator digital circuit, so the module does not required an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B

12.10 OEM integration instructions:

This device is intended only for OEM integrators under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the Internal antenna that has been originally tested and certified with this module. As long as the 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 (for example, digital device emissions, PC peripheral requirements, etc.).

12.11 Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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.

ATTENTION

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

1) The antenna must be installed such that 5 mm is maintained between the antenna and users, and

2) This device and its antenna(s) must not be co·located with any other transmitters except in accordance with FCC multi·transmitter product procedures. Referring to the multi·transmitter policy,

multiple transmitter(s) and module(s) can be operated simultaneously without C2PC.

3) For all products market in US, OEM has to limit the Operating Frequency: 2402-2480MHz for BT;

2412-2462MHz for WIFI 2.4G, 5150-5250 /5250MHz~5350MHz/5470MHz~5725MHz/ 5725-5850MHz for WIFI 5G by

supplied firmware programming tool. OEM shall not supply any tool or info to the end·user regarding to Regulatory Domain change.

USERS MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 5mm 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.

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 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 and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

FCC ID:2A86J-MSWXB2518