

User Manual
Bluetooth Module
CSM92F25

1. Product overview

The CSM92F25 module is a Bluetooth 5.0 low energy (BLE) single-mode Bluetooth module designed based on the Chipsea CST92F25 chip.

The module chip comes with an ARM Cortex-M0 32-bit processor and integrates rich peripherals such as UART, SPI, I2C, PWM, and ADC. The module has the advantages of small size and low power consumption, which is very suitable for IOT application scenarios such as smart wearable devices, smart homes, sports and fitness equipment, consumer electronics, and industrial control.



CSM92F25 module

2. Features

basic skills

Built-in ARM Cortex-M0 32-bit processor

Integrated 512KB

Flash, 64KB Data SRAM, 8KB

Code Cache

Support OTA over-the-air upgrade

2.4G transceiver

Support BLE 5.0

Support four transmission rates

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2Mbps

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1Mbps

Transmitting power -20~5dBm adjustable, 3dBm stepping

Power consumption

Transmit mode 8.5mA@0dBm Tx power

Receive mode 8mA

Sleep mode 6uA@32K RTC operation, SRAM content

Keep all

OFF mode 0.7uA

Peripheral characteristics

17 GPIO

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Digital peripherals can be mapped to any IO port

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All GPIOs support wake-up input and external interrupt input

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GPIO in Sleep mode

working environment

Operating voltage range: 1.8V~3.6V

Operating temperature range: -40°C~85°C

Encapsulation

SMD module

Size: 10.5mm*16mm*2.3mm

Application field

Smart wear

Smart home

IOT

3. Application notes

1) It is forbidden to lay copper under the antenna area of the module to avoid affecting the RF signal.

2) The antenna should be far away from other circuits to prevent the radiation efficiency from becoming low and affecting the normal use of other circuits.

3)The module should be placed as far away as possible from other low-frequency circuits, digital circuits

4)If there are other frequency band wireless modules inside, it is necessary to plan the frequency reasonably and take measures such as shielding to reduce harmonic interference and intermodulation interference

Impact.

5)There are CMOS devices in this module, so be careful to prevent static electricity during transportation and use.

FCC Statement

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.

Changes or modifications 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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247 & 15.209

2.3 Specific operational use conditions

The module is a Bluetooth module with Bluetooth 5.0 low energy (BLE) function.

Operation Frequency: 2402-2480MHz

Number of Channel: 40

Modulation: GFSK

Type: PCB Antenna

Gain: 2.6 dBi Max.

The module can be used for mobile or portable applications with a maximum 2.6 dBi antenna. The host manufacturer 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. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

2.5 Trace antenna designs

Not applicable. The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc.

2.6 RF exposure considerations

The module installed in the host equipment without restriction. and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application.

The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.7 Antennas

Antenna Specification are as follows:

Type: PCB Antenna

Gain: 2.6 dBi

This device is intended only for host manufacturers 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(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer 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.).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID: **2AGM5CSM92F25**" with their finished product.

2.9 Information on test modes and additional testing requirements

Operation Frequency: 2402-2480MHz

Number of Channel: 40

Modulation: GFSK

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is **only** FCC authorized for FCC Part 15 Subpart C 15.247 & 15.209 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. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Federal Communication Commission Statement (FCC, U.S.)

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 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.

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.

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.

IMPORTANT NOTES

Co-location warning:

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 external antenna(s) 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.).

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.

End product labeling:

The final end product must be labeled in a visible area with the following: "Contains Transmitter Module [FCC ID: 2AGM5CSM92F25](#)".

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.