

User Manual & Integration Instructions for

RFID Reader MCU

1.0 Introduction

The module is comprised of the transceiver ic, processor ic, voltage regulator ic, antenna matching network, RF shield can with copper foil shield on bottom of pcb under the can area and integrated antenna together on this one pcb.

Do not make any modifications because this may invalidate FCC approval. In any case additional EMC testing is required when integrating this module into a host device, i.e part 15 subpart B.

When sitting idle the module is not transmitting. Only specific commands sent from the host device will trigger a momentary RX or TX from the module to and from a tag. Tags are passive and will not trigger the Module to start transmitting.

The Module is not for sale to third parties, integration instructions are internal confidential documents.

2.0 REGULATORY AGENCY CONSIDERATIONS

2.1 AGENCY IDENTIFICATION NUMBERS

Compliance with the appropriate regulatory agencies is essential in the deployment of all transceiver devices. Awareness Technology has obtained modular approval for this transmitter such that we need only meet a few more requirements to utilize in other end products under this approval. Agency identification is listed below:

Model Name: **RFID Reader MCU**

US / FCC ID: **2BHQI-RFID58**

2.2 INTEGRAL ANTENNA

The **RFID Reader MCU** is approved for use only with the provided integral antenna. Modifying the PCB antenna or the PCB to use an external antenna will void all agency compliance approvals.

2.3 FCC REQUIREMENTS FOR MODULAR APPROVAL

Any changes or modifications to the **RFID Reader MCU** printed circuit board could void the user's authority to operate the equipment.

2.4 WARNINGS

This device is intended for use under the following conditions:

1. The transmitter module may not be co-located with any other transmitter or antenna; and
2. The module is approved using the FCC's "unlicensed modular transmitter approval" method.

As long as these two conditions are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance measures necessitated by the installation of this module (i.e. digital device emissions, PC peripheral requirements, etc.). Note: In the event that these conditions cannot be met (i.e. co-location with another transmitter), then the FCC authorization is no longer valid, and the corresponding FCC ID may not be used on the final product. Under these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.5 OEM PRODUCT LABELING

The final end product must be labeled in a visible area with the following text:

"Contains FCC ID: 2BHQI-RFID58"

2.6 RF EXPOSURE

In order to comply with FCC RF exposure requirements, the antenna used for this transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

2.7 ADDITIONAL INFORMATION FOR OEM INTEGRATORS

The end user should NOT be provided with any instructions on how to remove or install the **RFID Reader MCU** module.

FCC Compliance Statement

1) FCC Interference Statement (Part 15.105 (b))

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.

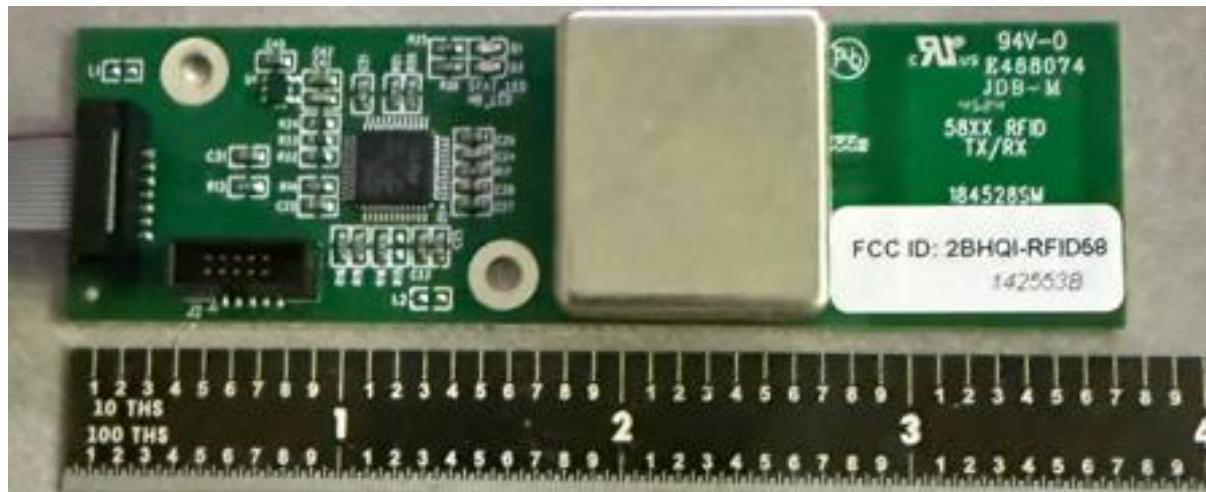
Consult the dealer or an experienced radio/TV technician for help.

2) FCC Part 15 Clause 15.21 warning:

“Changes or modifications not expressly approved by the party responsible for compliance, Awareness Technology Inc., could void the user's authority to operate the equipment”

3) FCC Part 15.19(a) interference compliance 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.”



3.0 Host connection –

Module pinout by pin number, connector **J1** is used to connect a 14 conductor ribbon cable to the host. The UART baud rate 57600 bps

1: Vcc input typical +5V, range +4.3 to +5.5V for powering module via on board 3.3V regulator.

2, 7, 10, 14: Ground and shield.

3: UART data out to host, TTL 0-3.3V.

4: UART data in from host, TTL 0-3.3V, 5V tolerant.

- 5: UART DE output to enable external RS-485 transceiver if used. TTL 0-3.3V.
- 6: USB EN input to detect presence of external USB adaptor connection if used. Checked on power up. 5V tolerant.
- 8: RESET input to reset module hardware if used. 5V tolerant.
- 9, 11, 12, 13: pins are not connected to module.

4.0 CONTACT INFORMATION

Awareness Technology, Inc.

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Information per OEM Integration Manual Guidance -KDB 996369 D03 Section 2

FCC rules applicable to this module related to transmitter:

47 CFR Part 2.1093 (exempt < 1mW)

FCC part 15 subpart C, 15.203, 15.204, 15.207, 15.209, 15.212, 15.215(c), 15.225 (a),(b),(c),(d),(e)

Specific operational use conditions: This module is stand-alone modular. If the end product will involve Multiple simultaneously transmitting condition or different operational conditions than those for a stand-alone modular transmitter in a host, the host manufacturer has to consult with module manufacturer for installation method in end system.

Limited Module Procedures: not applicable.

Trace Antenna Design: Not applicable, no modifications allowed.

RF exposure considerations: The module was tested as a Portable device with a minimum body separation of 5mm. This module outputs much less than the 1mW blanket exemption level so minimum separation distance for this Portable module can be touching body. Can not be co-located with another transmitter in the host device without reevaluation. No additional text needs to be provided to end user host product manuals.

Only Antenna this module is approved with is the integrated PCB loop, 5 loops outside dimension of outer loop 27mm x 21.6mm.

The finished product must have a label on the outside that states "**Contains FCC ID: 2BHQI-RFID58**".

A host manufacturer which installs this modular transmitter with single modular approval should perform the test of power line conducted, radiated and spurious emission according to FCC part 15C requirements. Only if the test results

comply, then the host can be sold legally. Test Modes can be provided for PC or Laptop exercise of module – contact Awareness Technology Inc for details.

Note that end product must be tested to comply with FCC Part 15 subpart B with module installed before it can be released to the public.

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, 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, i.e. Such as Part 15 B.

Doc. Revision History:

Rev. 1 – June 9, 2025