miliwave MWC-922m 5G NR-U Wireless Module User Manual

Contents

miliwave MWC-922m 5G NR-U Wireless Module

Product Information

Specifications

- **Capacity:** Max 2.5Gbps
- **Latency:** Less than 1 millisecond round-trip
- **Security:** AES-128
- **I/O interface:** USB 3.0(Type-C)

Product Usage Instructions

- Miliwave's MWC-922m module operates in the 60GHz unlicensed frequency band, IEEE802.11ad compliant, and is designed for wireless bridge communication, primarily for Line-of-Sight (LOS) operation.
- The MWC-922m module connects to a Linux-based Host Communication Processor board via an available USB 3.0 Type-C port.
- All required drivers and firmware are pre-installed on the MWC-922m module as a self-contained device.
- It needs to be connected to the Linux-based Host Communication Processor board for wireless bridge communication.
- The MWC-922m can only be installed with the Host Communication Processor board at the factory level.
- There are no user-serviceable parts in the module.
- To connect to the host communication processor board, use the MWC-922m's interface (USB3 Type-C and 2-pin 5VDC connector).
- Integration instructions are not provided in the extracted text.

FAQ

- **Q:** Can the MWC-922m module operate independently without the Host Communication Processor board?
- **A:** No, the MWC-922m module needs to be connected to the Linux-based Host Communication Processor

board for wireless bridge communication.

- **Q:** What is the maximum data rate supported by the MWC-922m module?
- **A:** The maximum PHY rate supported is 4620 Mbit/s.

Revision History

Date	Written by	Rev.	Description
23.12.28	Sun.Lee	1.0	MWC-922m User manual v1.0 release
24.01.11	Sun.Lee	1.1	MWC-922m User manual v1.1 update
24.01.11	Sun.Lee	1.2	MWC-922m User manual v1.2 update (fix typo)
24.01.23	Sun.Lee	1.3	MWC-922m User manual v1.3 update

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Introduction

Overview

- Miliwave’s MWC-922m module operates in the 60GHz unlicensed frequency band, IEEE802.11ad compliant, and is designed for wireless bridge communication, primarily for Line-of-Sight (LOS) operation.
- The MWC-922m module connects to a Linux-based Host Communication Processor board via an available USB 3.0 Type-C port. All required drivers and firmware is pre-installed on the MWC-922m module as a self-contained device .
- However, the MWC-922m module would not be operational unless it is connected to the Linux-based Host Communication Processor board for wireless bridge communication.

<Figure 1. MWC-922m Module>

For more information, please contact Miliwave (**sales@miliwave.co.kr**)

Abbreviations and Acronym Definitions

Acronym	Definition
Gbps	Gigabits per second
Mbps	Megabits per second
GHz	Giga Hertz
IEEE	Institute of Electrical and Electronics Engineers
LED	Light Emitting Diode
Los	Line of Sight
MCS	Modulation and Coding Scheme
MHz	Mega Hertz
PTP	Point-to-Point Communication
QAM	Quadrature amplitude modulation

MWC-922m Module Description

The Miliwave's MWC-922m module in conjunction with the Host Communication Processor board can function as wireless bridge communication. The main characteristics of the MWC-922m module include:

- Adaptive Modulation and Link Adaptation: Up to 16QAM and MCS0-12 support
- Transmit power: EIRP max 62.5 dBm (with dish-type antenna)
- Beamwidth: 1.6° ±0.2°
- Advanced Security: AES-128
- Connectivity: USB 3.0 Type C, 2pin 5V DC jack

Technical Specifications

- **Capacity:** Max 2.5Gbps
- **Latency:** less than 1 millisecond round-trip
- **Security:** AES-128
- **I/O interface:** USB 3.0(Type-C)

Radio Specifications

- **Access Technology:** Single Carrier beam-forming physical layer
- **Frequencies:** 58.32GHz ~ 69.12GHz (CH1~CH6)
- **Channel Bandwidth:** 2.16 GHz
- **Antenna:** Dish-type Reflector Antenna
- **EIRP:** max 62.5 dBm

Mechanical, Power, and Environmental Specification

- **Dimension:** Ø362mm x 220 mm
- **Weight:** 2.9Kg
- **Power Consumption:** 14W(Max)
- **Operating Temperature:** -40ºC ~ +85ºC
- **Humidity:** 5%~95%

Module Throughput

- **MCS Index :** 0-12,
- **Modulation:** BPSK, QPSK,16QAM
- **Data Rate:** Max PHY rate 4620 Mbit/s

Installation

- The MWC-922m could only be installed with a Host Communication Processor board at the factory level.
- There is no user-serviceable parts in the MWC-922m module.
- The MWC-922m module would not be operational unless it is connected to the Linux-based Host
- Communication Processor board for wireless bridge communication.
- To connect to the host communication processor board, connect through the MWC-922m’s interface (USB3
- Type-C and 2-pin 5VDC connector).

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.

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.
The antenna(s) must be installed such that a minimum separation distance of at least 760cm is maintained between the radiator (antenna) and all persons at all times.

INTEGRATION INSTRUCTIONS

- List of applicable FCC rules
- This module complies with part 15.255 of the FCC rules.
- Summarize the specific operational use conditions
- This device is not to be operated on aircraft except for the conditions listed on FCC CFR §15.255 (b).
- Typical Host Device Use Cases
- MWC-922m Module is designed for outdoor fixed wireless host devices such as Point to Point Broadband,
- Broadband Mesh, and 60GHz to the Home.

Point-to-Point Broadband
Next generation point-to-point broadband links over 2Gb/s, 1 mile, under $200 per node

WiGig-to-the-Home
WiGig eliminates the need to run fiber from the 'pole to the home', significantly reducing the cost of multi-gigabit internet access

Broadband Mesh
Next generation gigabit internet architecture eliminates need for fiber backbone

For more information, please contact your Miliwave (**sales@miliwave.co.kr**)

RF exposure considerations

- This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The module is limited to installation in mobile or fixed applications.
- At least 760 cm of separation distance between the transmitting antenna and the user's body must be maintained at all times.
- The host manual shall include the RF exposure statements.
- If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Antennas

- The module itself has an antenna. (dish-type reflector antenna)

Label and compliance information

The module is labeled with its own FCC. If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:
"Contains FCC ID: 2AVCWMWC-922M"
The host manual shall include the following regulatory 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The antenna(s) must be installed such that a minimum separation distance of at least 760 cm is maintained between the radiator (antenna) and all persons at all times.
Information on test modes and additional testing requirements Testing of the host product with all the transmitters installed – referred to as the composite investigation test- is recommended, to verify that the host product meets all the applicable FCC rules. The host manufacturer can use the software to make the 60GHz transmit continuously

Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC-authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and 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 host product may need to be evaluated against the FCC Part 15B criteria for unintentional radiators to be properly authorized for operation as a Part 15 digital device.

Warning

- Additional testing and certification may be necessary when multiple modules are used.
- OEM integrators must use the equivalent antennas or C2PC will be required.

Additional
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.

CONTACT

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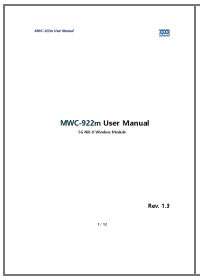
Documents / Resources

	**miliwave MWC-922m 5G NR-U Wireless Module** [pdf] User Manual MWC-922M, 2AVCWMWC-922M, MWC922M, MWC-922m 5G NR-U Wireless Module, MWC-922m, 5G NR-U Wireless Module, Wireless Module, Module

References

- **User Manual**