MWC-2143 User Manual

5G NR-U Wireless Module

Rev. 1.0

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Revision History

Date	Written by	Rev.	Description
24.01.23	Sun.Lee	1.0	MWC-2143 User manual v1.0 release

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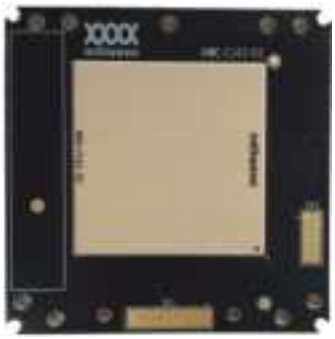
1.Introduction

1.1 Overview

Miliwave's MWC-2143 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-2143 module connects to a Linux based Host Communication Processor board via an available 34pin receptable connector. All required drivers and firmware is pre-installed on the MWC-2143 module as a self-contained device .

However, the MWC-2143 module would not be operational unless it is connected to the Linux-based Host Communication Processor board for wireless bridge communication.



<Figure 1. MWC-2143 Module>

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

1.2 Abbreviations and Acronym Definitions

Acronym	Definition
Gbps	Giga bits per second
Mbps	Mega bits 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

1.3 MWC-2143 Module Description

The Miliwave's MWC-2143 module in conjunction with the Host Communication Processor board can function as wireless bridge communication . Main chracteristics of the MWC-2143 module include:

- Adaptive Modulation and Link Adaptation: Up to 16QAM and MCS0-12 support
- Transmit power : EIRP max 39 dBm (with dish type antenna)
- Scan Range : ±20° (Azimuth), ±15° (Elevation)
- Advanced Security: AES-128
- Connectivity: 34pin Receptacle Connector.
  Receptacle Connector PN : "BM28B0.6-34DS/2-0.35V(51)"
  Matched Header Connector is "BM28B0.6-34DP/2-0.35V(53)"

2. Technical Specifications

- Capacity: Max 2.5Gbps
- Latency : less than 1 millisecond round-trip
- Security: AES-128
- I/O interface: 34pin Receptacle Connector. (PN:BM28B0.6-34DS/2-0.35V(51))

3.0 Radio Specifications

- Access Technlogy: Single Carrier beam-forming physical layer
- Frequencies: 58.32GHz ~ 69.12GHz (CH1~CH6)
- Channel Bandwidth: 2.16 GHz
- Antenna: PCB Antenna
- EIRP: max 39 dBm

4.0 Mechanical, Power and Environmental Specification

- Dimension: 50mm x 50 x 4mm
- Weight: 15g
- Power Consumption: 14W(Max)
- Operating Temperature: -40ºC ~ +85ºC
- Humidity: 5%~95%

5.0 Module Throughput

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

6.0 Installation

The MWC-2143 could only be installed with Host Communication Processor board at the factory level. There is no user serviceable parts in the MWC-2143 module.
The MWC-2143 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-2143's 34pin Receptacle Connector interface (PN : BM28B0.6-34DS/2-0.35V(51), Matched Header Connector is "BM28B0.6-34DP/2-0.35V(53)").
The component surface must be shielded with metal using a heatsink, and sufficient heat sink must be used to dissipate heat according to the power consumption.

7.0 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 25.15 cm is maintained
between the radiator (antenna) and all persons at all times.

8.0 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-2143 Module is designed for outdoor fixed wireless host device such as Point to Point Broadband, Broadband Mesh, and 60GHz to the Home.

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 25.15 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 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-2143"
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 25.15 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 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 host product may need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order 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 that they 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.