

MWC-713 User Manual

60GHz RF/BB Module with USB3.0 interface

Rev. 1.0

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· **Revision History**

Date	Written by	Rev.	Description
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1.Introduction

1.1 Overview

Miliwave's MWC-713 module operates in 60GHz unlicensed frequency band, IEEE802.11ad compliant, and is designed for Point to Multi-Pont (PTMP) or Point to Point (PTP) bridge wireless communication, primarily for Line-of Sight (LOS) operation. The MWC-713 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-713 module as a self-contained device. However, the MWC-713 module would not be operational unless it is connected to the Linux-based Host Communication Processor board for PTP or PTMP bridge wireless communication.



<Figure 1. MWC-713 Module>

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

1.2 Abbreviations and Acronym Definitions

Acronym	Definition
Gbps	Giga bits per second
GHz	Giga Hertz
IEEE	Institute of Electrical and Electronics Engineers
LED	Light Emitting Diode
LoS	line-of-sight
Mbps	Mega bits per second
MCS	Modulation and Coding Scheme
MHz	Mega Hertz
PTMP	Point-to-multipoint Communication
QAM	Quadrature amplitude modulation

1.3 MWC-713 Module Description

The Miliwave's MWC-713 module in conjunction with the Host Communication Processor board can function as a PTP or PTMP bridge communication. Main characteristics of the MWC-713 module include:

- Adaptive Modulation and Link Adaptation: Up to 16QAM and MCS1-12 support
- Air Gap Phased Array Planar Antenna: EIRP 36dBm,
- Beam sweep range : Elevation 60°, Azimuth 60°
- Advanced Security: AES-128
- Compact Form Factor: 52mm x 55mm x 14mm
- Connectivity: USB 3.0 Type-C, 60GHz wireless

2. Technical Specifications

- Aggregate capacity: Upto 1.4 Gbps uni-directional, Upto 2.8 Gbps bi-directional
- Latency : less than 1 millisecond round-trip
- Security: AES-128
- I/O interface: USB 3.0(Type-C)
- Other Interface: LEDs indicators for connection status

3.0 Radio Specifications

- Access Technology: Single Carrier beam-forming physical layer
- Time Division Duplex
- Frequencies: 59.40 ~ 65.88GHz
- Channel Bandwidth: 2.16 GHz
- Antenna: 4x8 Air gap Phased Array Planar Antenna beam-forming with 60 degree horizontal and 60 degree vertical
- EIRP: 36 dBm

4.0 Mechanical, Power and Environmental Specification

- Dimension: 52mm x 55mm x 14mm
- Weight: 96g
- Power Consumption: 4W(Max)
- Operating Temperature: -40°C ~ + 85°C
- Humidity: 5%~95%

5.0 Module Throughput

- MCS Index : 1-12,
- Modulation: BPSK, QPSK, 16QAM
- Data Rate : Max PHY rate 4620 Mbit/s

6.0 Installation

The MWC-713 could only be installed with Host Communication Processor board at the factory level. There is no user serviceable parts in the MWC-713 module

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

8.0 OEM Responsibilities to comply with FCC

- The OEM integrator is responsible for ensuring that the end-user has no manual instructions to remove or install module.
- The module is limited to installation in mobile or fixed applications.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
- Separate approval will be required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations other than supplied antennas. As long as the condition above is met, further transmitter testing 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.). Also, the OEM integrator is responsible to provide to the host manufacturer for compliance with the Part 15B requirements.

9.0 Host User Manual

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

10.0 Host Product labeling

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-713”