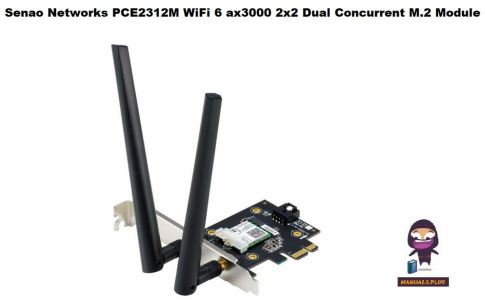

Senao Networks PCE2312M WiFi 6 ax3000 2×2 Dual Concurrent M.2 Module User Manual

Contents

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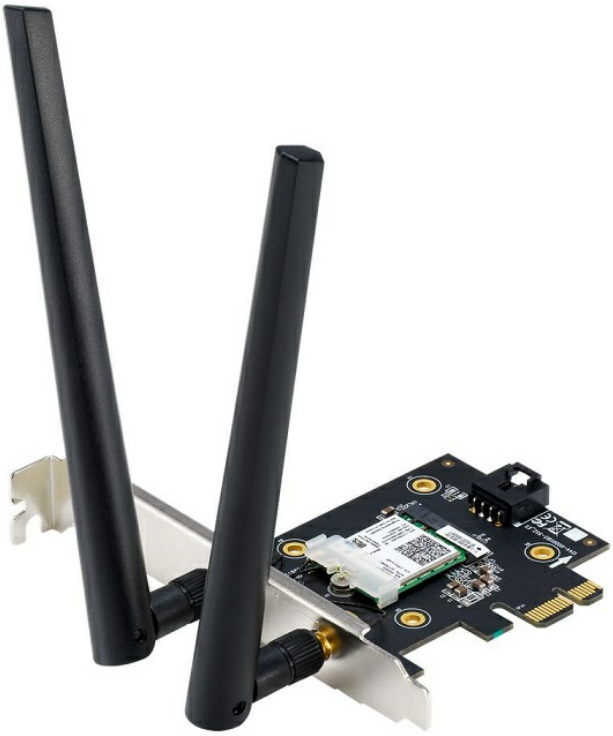

Product Information

Specifications:

- **Product Name:** WiFi 6 ax3000 2×2 dual concurrent M.2 Module
- **Model Name:** PCE2312M
- **FCC ID:** U2M-PCE2311M
- **Hardware Design Specification:**
  - PCE2312M is a WiFi 6 dual concurrent M.2 module supporting 2.4GHz HE40 and 5GHz HE80 interfaces.
  - Backward compatible with 802.11a/b/g/n/ac/ax standards.
  - Utilizes advanced MTK chipset for high-performance WiFi 6 traffic.
  - Supports service connections via Gateway and SASE appliances.
- **Major Components:**
  - SKUs
  - **Radio:** MT7916AN
  - **Main Chip:** MT7976DN
  - 2.4GHz Transceiver +iPA, 5GHz Transceiver +iPA

Product Usage Instructions

Installation:

1. Ensure your system is powered off and unplugged.
2. Locate an available M.2 slot on your system board.
3. Carefully insert the PCE2312M module into the M.2 slot, ensuring proper alignment.
4. Secure the module in place using the provided fastening mechanism.

Driver Installation:

1. Power on your system and wait for it to boot up.
2. Download the appropriate driver for PCE2312M from the manufacturer's website.
3. Follow the on-screen instructions to install the driver.
4. Restart your system to complete the installation process.

Antenna Setup:
For optimal performance, ensure that the antenna(s) are installed according to the provided instructions. Maintain a separation distance of at least 20 cm from all persons.

Frequently Asked Questions (FAQ):

- **Q: What is the power consumption of the PCE2312M module?**
  A: The maximum power consumption of the module is around 8W.
- **Q: What standards does the PCE2312M comply with?**
  A: The module complies with regulatory standards such as FCC Part 15, EN 300 328, CISPR 32, EN 301 893, and more. Please refer to the user manual for a detailed list.

Hardware Design Specification

PCE2312M is a WiFi 6 dual concurrent M.2 module to engine 2.4GHz HE40 and 5GHz HE80 interface to carry high-performance WiFi 6 traffic and be backward compatible with ancient 802.11a/b/g/n/ac/ax standard. The advanced MTK chipset had been built in this module to operate service connections via Gateway and SASE appliances under a pervasive environment.

Major Components

SKUs		PCE2312M
Main Chip	Radio	MT7916AN
	2.4GHz Transceiver +iPA	MT7976DN
	5GHz Transceiver +iPA	MT7976DN
	Zero Wait DFS	Support
RF components	2.4GHz FEM	N/A
	5GHz FEM	N/A
	WIPS FEMs	N/A
	2.4GHz Filter	TA2621A x 2
	5GHz Filter	BF1608-N5R5NANT/LF x 3
	Diplexer (2.4GHz/5GHz)	DP1608-A2455DTA0T/LF x2

WiFi Specification (2.4GHz/5GHz)
Based on the transmit power (Tx) and receive sensitivity (Rx) specifications of MT7976DN, we conclude Tx power from chips and summarize Rx specification as the following table.

Radio	2.4GHz	5GHz
Data Rate	574Mbps	1201Mbps
Available Bandwidth	20/40MHz	20/40/80MHz
Adopted FEM	iPA	iPA
Available frequency	2412-2462MHz	5150-5850MHz
Transmit Power @ antenna port	13-21dBm	12-20dBm
Receive Sensitivity	-59~-96dBm	-55~-90dBm

Power Consumption

- The max power consumption is around 8W.
- PCB Dimensions/Layers.

PCE2312M	Dimension/Layer	52 x 30 x 0.8 mm / 4 layers

Support driver

- PCE2312M is an integrated module on the customer's system board. The selected SDK or driver would be discussed and negotiated first.
- According to initial validation from Seano, we successfully brought up this module on the MTK7622 platform.

Compliant Regulatory

The planned certification domain would be covered following regulations.

Tier 1 Compliant Regulatory

Countries/Regions	RF Standards	EMC Standards	Safety Standards
USA	OET Bulleting 65/Part 2.1093 FCC Part 15.247 FCC Part 15.407	FCC Part 15, Subpart B Class B	N/A
EU	EN 300 328 v2.2.2 EN 300 440 EN 301 893 v2.1.1 EN 50385: 2017 EN 301 489-1/-17 v3.1.1	CISPR 32:2012 EN55032:2012 CISPR 24:2010 EN55024:2010 EN55035	N/A

Warning statements

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, under 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 by 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 the receiver.
- Connect the equipment to 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.

CAUTION:

- Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.
- This module is intended for OEM integrators. The OEM integrator is responsible for compliance with all the rules that apply to the product into which this certified RF module is integrated. Additional testing and certification may be necessary when multiple modules are used.

RF Exposure warning
This equipment must be installed and operated under provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

USERS MANUAL OF THE END PRODUCT

- In the user's manual of the end product, the end-user has to be informed to keep at least 20 cm separation with the antenna while this end product is installed and operated.
- The end-user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.
- The end-user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. 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.

LABEL OF THE END PRODUCT
The end product must be labeled in a visible area with the following " Contains FCC ID: U2M-PCE2311M ".

This radio transmitter FCC ID: U2M-PCE2311M has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AWAN	A8EEE-000012 WHITE	Dipole	3.44 dBi for 2.4 GHz 5.41 dBi for 5GHz

Note: The antenna connector is SMA Male type.

Documents / Resources

	Senao Networks PCE2312M WiFi 6 ax3000 2x2 Dual Concurrent M.2 Module [pdf] User Manual PCE2312M WiFi 6 ax3000 2x2 Dual Concurrent M.2 Module, PCE2312M, WiFi 6 ax3000 2x2 Dual Concurrent M.2 Module, 2x2 Dual Concurrent M.2 Module, Dual Concurrent M.2 Module, Concurrent M.2 Module

References

- User Manual