IO1201B

Datasheet

V1.0

08/16/2024

Brief

IO1201B, a dual-band, concurrent wireless card embedded product, features an M.2 M-key interface and PCI Express 3.0 compatibility. It leverages 802.11ax Wi-Fi technology, encompassing the 2412-2462GHz and 5180-5850GHz frequency bands. This device seamlessly performs Access Point (AP) and Station (STA) functions. With 2x2 Multiple-Input Multiple-Output (MIMO) technology, it supports up to 2 spatial streams, enabling concurrent data throughput of up to 2.976Gbps. This makes it ideally suited for high-speed applications in the 5GHz IEEE802.11a/n/ac/ax standards.

Specifications

Product	Wireless Dual Band NIC (2.4G and 5G)
Chip	CL8040
IEEE Standard	IEEE 802.11ax
Interface	PCI Express 3.0，M.2 M-key
Operating Voltage	Main Chip Power Supply 3.3V RF front-end (FEM) power supply 5V
Frequency Range	2412-2462GHz 5180~5320GHz 5500~5825GHz
Modulation Technology	802.11n: OFDM（BPSK，QPSK，16-QAM，64-QAM， 256-QAM） 802.11ac: OFDM（BPSK，QPSK，16-QAM，64-QAM，256-QAM） 802.11ax: OFDMA （BPSK，QPSK，DBPSK，DQPSK，16-QAM，64-QAM，256-QAM，1024-QAM）
Output power (single channel)	802.11ax：Max. 25dBm
Power Consumption	≦9.6W
Receiving Sensitivity	11ax： HE20 MCS0 <-92dBm / MCS11 <-72dBm HE40 MCS0 <-89dBm / MCS11 <-60dBm HE80 MCS0 <-86dBm / MCS11 <-56dBm HE160 MCS0 <-87dBm / MCS9 <-64dB
Antenna Interface	2 x U. FL
Operating Environment	Temperature: -20 ℃ to 70 ℃ Humidity: 95%

	(non-condensing)
Storage Environment	Temperature: -40 ℃ to 90 ℃ Humidity: 90% (non-condensing)
Certification	Pending
Weight	16 grams
Chip Size (W*H*D)	36 x 48 x 8mm (deviation ±0.1mm)

Host Integration Instructions

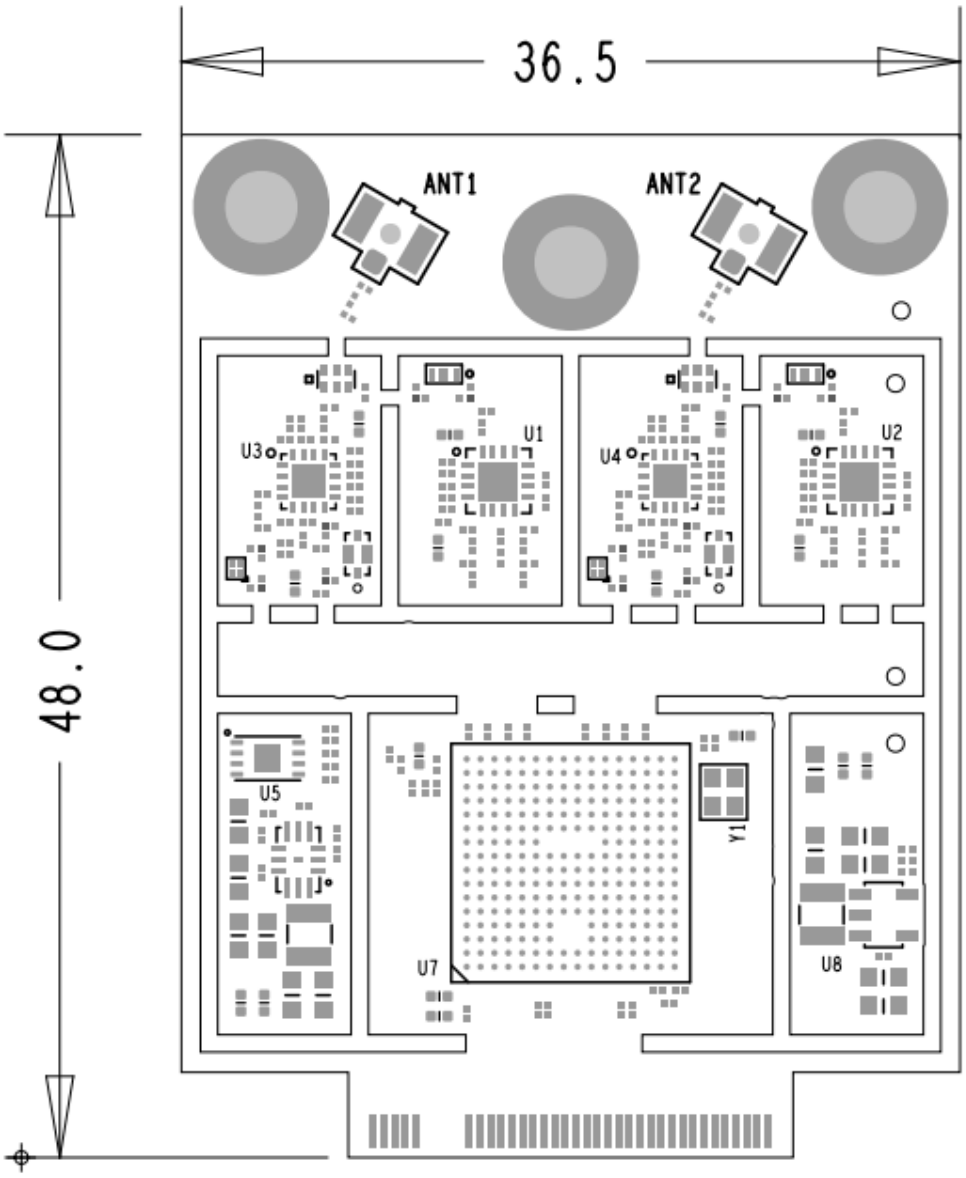
The module is designed to be compatible with the M.2 Key-M interface, featuring dimensions of 48mm(L) x 36.5mm(W) x 4.6mm(H). Please refer to the module's Dimensions and the M.2-M Key schematic diagrams for further details.

Host Product Test Instructions

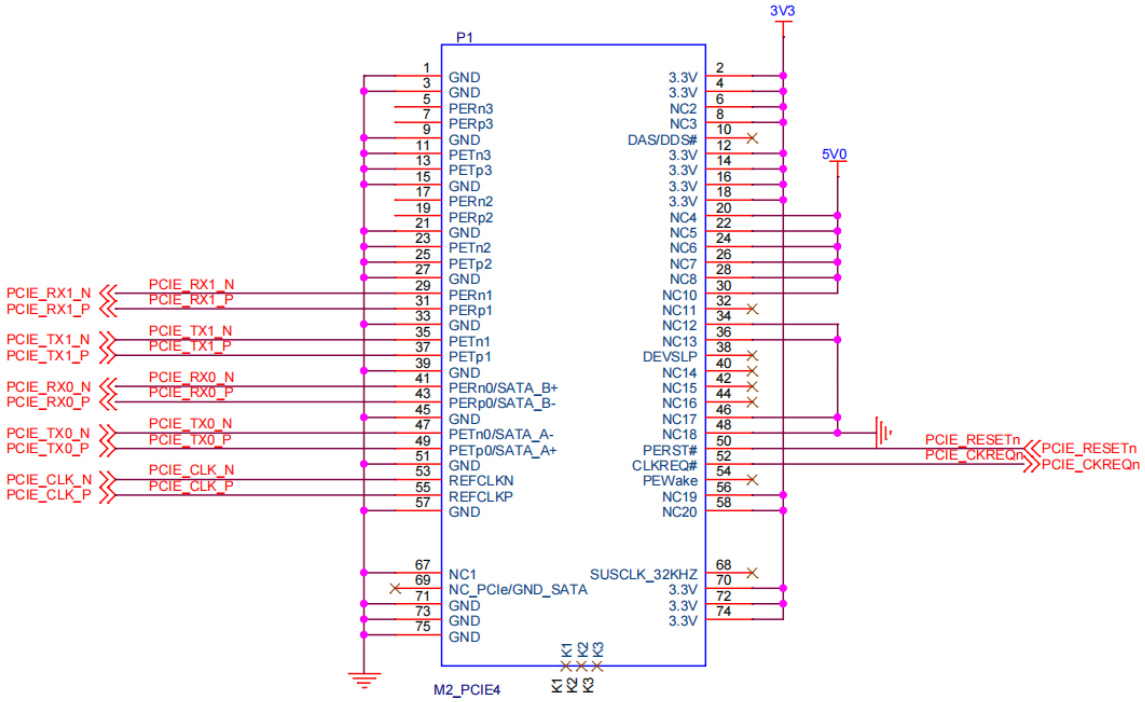
The host must strictly comply with the limitations detailed in the Regulation Notes

FCC guidelines and KDB 996369 D03 OEM Manual v01 section to guarantee that the host product meets all relevant regulatory requirements.

Dimensions



M.2-M Key Schematic Diagram



Regulation Notes

FCC 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.

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.

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This module is intended for OEM integrator only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules:
This module has been tested for compliance to FCC Part 15 Subpart C (15.247) and Subpart E(15.407).

2.3 Summarize the specific operational use conditions
The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) will need a separate reassessment through a class II permissive change application or new certification.

2.4 Limited module procedures
Not applicable.

2.5 Trace antenna designs
Not applicable.

2.6 RF exposure considerations
This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. A separate SAR/Power Density evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas
The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module.
Use of any other antenna with a lower or higher gain in this band will require a separate reassessment through a Class II Permissive Change application or new certification.

Antenna Set	RF Chain No.	Brand	Model	Ant. Net Gain (dBI)	Freq Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)	Cable Loss(dB)
1	Chain0/1	Pulse	W5150	2.4GHz:4.5 5GHz:6.7	2.400-2.500 5.150-5.850	PIFA	SMA	229	2.4GHz:0.2 5GHz:0.7

2.8 Label and compliance information
The final end product must be labeled in a visible area with the following: “Contains FCC ID: **2AP6W-WIF11201**". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements.
This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) class II permissive change re-evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

2.11 Note EMI Considerations

We recommend to use "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties. The host manufacturer is responsible for ensuring compliance with the applicable FCC rules for the transmitters operating individually and simultaneously. This includes compliance for the summation of all emissions from all outputs occupying the same or overlapping frequency ranges, as defined by the applicable rules.

2.12 How to Make Changes - Important Note

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, OEM integrator contact Grantees to make permissive changes or the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

As long as all conditions above are met, further transmitter test 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.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. in these circumstances, the OEM integrator will be responsible for re-evaluating the end product(including the transmitter) and obtaining a separate FCC authorization.

Manual information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.