

Product Features

- Standard: 802.11ac/a/n
- Interface: PCI Express
- Chipset: Qualcomm Atheros QCA9880
- Antenna: 3 x U.FL connectors, 3T3R
- Data rate up to 1.3Gbps (VHTMCS9)
- Enhanced wireless security: 64/128-bits WEP, WPA, WPA2, 802.1x
- Support Linux

802.11ac 5GHz Solution

The card is an 802.11ac/a/n 5GHz Single-Band Mini PCI express module based on Qualcomm Atheros QCA9880 chipset. It supports 3T3R (3x3) technology, which runs up to 433Mbps (11an MSC15) and 1.3Gbps (11ac VHTMCS9). It supports 20/40/80MHz and 256-QAM to maximize bandwidth efficiency.

Higher throughput for Enterprise Networking

Adopting the latest 802.11ac solution, the card is ideal for next-generation high throughput enterprise networking solution.

Secure Wireless Connection

Incorporated with advanced security encryption, such as 64/128-bits WEP, WPA, WPA2, and 802.1x, it helps prevent users' devices from malicious attacks.

Specification

Item	Detailed Description
Standard	IEEE 802.11ac/ a / n
Chipset	Qualcomm Atheros QCA9880
Host Interface	PCI express
Form Factor	Mini PCI Express (Mini Card)
Data Rate	802.11a: 6~54Mbps 802.11n: MCS0 ~ MCS15 802.11ac: VHTMCS0-9
Antenna	3 x U.FL connectors, 3T3R
Operating Frequency	11ac ISM Band: 5.150GHz ~ 5.825GHz *subject to local regulations
Modulation	802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)
Output Power (1T)	802.11a: 14.5dBm $\pm$ 2dBm@54Mbps 802.11an (HT20): 15dBm $\pm$ 2dBm@MCS7 802.11an (HT40): 15dBm $\pm$ 2dBm@MCS7 802.11ac(HT80): 13dBm $\pm$ 2dBm@VHTMCS9 *follow FCC certification regulation
Receive Sensitivity (1R)	802.11a: $\leq$ -68dBm@54Mbps 802.11an (HT20): $\leq$ -66dBm@MCS7 802.11an(HT40): $\leq$ -63dBm@MCS7 802.11ac (HT80): $\leq$ -51dBm@VHTMCS9
Operating Voltage	DC 3.3V $\pm$ 10% I/O supply voltage (PCI Express slot support)
Environmental	- Temperature Range: 0 ~ 40°C (Operating) / -20 ~ 60°C (Storing) - Humidity : 5% ~ 90% (Operating) / 5% ~ 95% (Storing)
Physical Specification	50.8 x 29.9 x 3.2 mm (H x W x D)

Federal Communication Commission Interference Statement

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 or more 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:

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.

Non-modification Statement:

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

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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.

Custom design antennas may be used, however the OEM installer must follow the FCC 15.21 requirements and verify if new FCC approval will be necessary.

End product labeling:

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: NHPCLM30001300".

Information that must be placed in the end user manual:

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.

Co-location warning:

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

OEM integration instructions:

This device is intended only for OEM integrators under the following conditions:

The antenna must be installed such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module.

For all products market in US, OEM has to limit the operation channels in Channel 1 to Channel 11 or 3-9 as specified above by the supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 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 (for example, digital device emissions, PC peripheral requirements, etc.).

Important Notes:

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.