

# **Product Specification**

## **PCE4552AH**

### **V. 0.2**

#### **Revision History**

| <b>Version</b> | <b>Date</b>       | <b>Revision Description</b>                          |
|----------------|-------------------|------------------------------------------------------|
| <b>0.1</b>     | <b>2013/04/15</b> | <b>Preliminary</b>                                   |
| <b>0.2</b>     | <b>2013/10/25</b> | <b>Update the TX power and dimension information</b> |
|                |                   |                                                      |
|                |                   |                                                      |
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|                |                   |                                                      |
|                |                   |                                                      |

## PRODUCT DESCRIPTION

The PCE4552AH is adapting the next generation Wi-Fi technology, 802.11ac. It provides the great improvement in the performance compare with 802.11n. PCE4552AH is equipped with MMCX connector to provide more secure connection.

## KEY FEATURES

- Main Chip: Qualcomm QCA9890B
- It support data rate at 1.3Gbps
- Operating frequency: 5GHz
- The module is using 4.2V input for PA.

## PRODUCT SPECIFICATION

| Hardware Specification            |                                  |                                                                    |                                                                         |
|-----------------------------------|----------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------|
| Standard                          | IEEE802.11a;IEEE802.11n;802.11ac |                                                                    |                                                                         |
| RF                                | For PCE4552AH: QCA9890           |                                                                    |                                                                         |
| Interface                         | 64-bit PCI-E                     |                                                                    |                                                                         |
| Operating Voltage                 | 3.3V / 4.2V for PA               |                                                                    |                                                                         |
| Antenna Connectors                | MMCX                             |                                                                    |                                                                         |
| Radio specification               |                                  |                                                                    |                                                                         |
| Data rate                         | 1300Mbps                         |                                                                    |                                                                         |
| Channel                           | Data rate                        | Typical AVG. Power<br>@ per chain (dB) with<br>tolerance $\pm 1.5$ | Typical Rx Sensitivity<br>@ per chain (dBm) with<br>tolerance $\pm 1.5$ |
| Operating Frequency: 4.9~5.825GHz |                                  |                                                                    |                                                                         |
| 802.11a (5.18~5.825GHz)           | 6Mbps                            | 23                                                                 | -88                                                                     |
|                                   | 54 Mbps                          | 19                                                                 | -72                                                                     |
| 802.11a/n_HT20(5.18~5.825GHz)     | MCS 0 (BPSK)                     | 22                                                                 | -88                                                                     |
|                                   | MCS 1 (QPSK)                     | 22                                                                 | -86                                                                     |
|                                   | MCS 2 (QPSK)                     | 22                                                                 | -82                                                                     |
|                                   | MCS 3 (16-QAM)                   | 22                                                                 | -79                                                                     |
|                                   | MCS 4 (16-QAM)                   | 22                                                                 | -76                                                                     |
|                                   | MCS 5 (64-QAM)                   | 21                                                                 | -72                                                                     |
|                                   | MCS 6 (64-QAM)                   | 20                                                                 | -71                                                                     |

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|                           |                                                                                           |    |     |
|---------------------------|-------------------------------------------------------------------------------------------|----|-----|
|                           | MCS 7 (64-QAM)                                                                            | 19 | -69 |
| 802.11n_HT40              | MCS 0 (BPSK)                                                                              | 22 | -84 |
|                           | MCS 1 (QPSK)                                                                              | 22 | -81 |
|                           | MCS 2 (QPSK)                                                                              | 22 | -79 |
|                           | MCS 3 (16-QAM)                                                                            | 22 | -76 |
|                           | MCS 4 (16-QAM)                                                                            | 22 | -73 |
|                           | MCS 5 (64-QAM)                                                                            | 21 | -71 |
|                           | MCS 6 (64-QAM)                                                                            | 20 | -70 |
|                           | MCS 7 (64-QAM)                                                                            | 19 | -68 |
| 802.11ac_HT80             | MCS 0 (BPSK)                                                                              | 22 | -82 |
|                           | MCS 1 (QPSK)                                                                              | 22 | -80 |
|                           | MCS 2 (QPSK)                                                                              | 22 | -78 |
|                           | MCS 3 (16-QAM)                                                                            | 22 | -74 |
|                           | MCS 4 (16-QAM)                                                                            | 22 | -72 |
|                           | MCS 5 (64-QAM)                                                                            | 21 | -71 |
|                           | MCS 6 (64-QAM)                                                                            | 20 | -70 |
|                           | MCS 7 (64-QAM)                                                                            | 19 | -68 |
|                           | MCS 8 (256-QAM)                                                                           | 17 | -60 |
|                           | MCS 9 (256-QAM)                                                                           | 15 | -58 |
| Package content           |                                                                                           |    |     |
|                           | Bulk pack                                                                                 |    |     |
| Environment & Mechanical  |                                                                                           |    |     |
| Power consumption         | 5.9W (max)                                                                                |    |     |
| Temperature Range         | -40°C ~ 70°C (Operating temperature for PCE4552AH)<br>--45°C ~ 90°C (Storage temperature) |    |     |
| Humidity (non-condensing) | 5%~90% typical                                                                            |    |     |
| Dimensions                | 30(W) * 50(L) * 4.1(H) mm                                                                 |    |     |
| Weight                    | TBD                                                                                       |    |     |
| Compliance Standard       |                                                                                           |    |     |
| Radio Approvals           | Prescan only<br><br>(FCC Part 15.247, 15.407<br><br>CE EN300.328, EN301.893)              |    |     |
| MTBF                      | TBD                                                                                       |    |     |

\* All RF parameters tolerance are +- 1.5dBm

## **Federal Communication Commission Interference 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.

i. The module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).

ii. Separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

iii. Authorized antennas per Part 15.204 (including ant. spec.).

iv. Antenna installation requirements.

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.

## **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 52cm between the radiator & your body. **This device is intended only for OEM integrators under the following conditions:**

- 1) The antenna must be installed such that 52 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** 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.

## End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 52 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: KNYPRW5000AB". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

## 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.

- i. Statements required per Part 15.19 and 15.21
- ii. End-users must be provided with transmitter/antenna installation requirements and operating conditions for satisfying RF exposure compliance:
  1. A separate section should clearly state "FCC RF Exposure requirements:"
  2. Required operating conditions for end users.
  3. Antenna/or transmitter installation requirements.
  4. Authorized antennas per part 15.204 (including ant. spec.).

## **Professional installation instruction**

### **1. Installation personal**

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

### **2. Installation location**

The product shall be installed at a location where the radiating antenna can be kept 52cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

### **3. External antenna**

Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.

### **4. Installation procedure**

Please refer to user's manual for the detail.

### **5. Warning**

Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.