

# Product Specification

## PCE4552AH

### V. 0.2

#### Revision History

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

## 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 @ per chain (dB) with tolerance $\pm 1.5$	Typical Rx Sensitivity @ per chain (dBm) with tolerance $\pm 1.5$
<b>Operating Frequency: 4.9~5.825GHz</b>			
<b>802.11a (5.18~5.825GHz)</b>	6Mbps	23	-88
	54 Mbps	19	-72
<b>802.11a/n_HT20(5.18~5.825GHz)</b>	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
<b>802.11n_HT40</b>	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
<b>802.11ac_HT80</b>	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
<b>Package content</b>	Bulk pack		
<b>Environment &amp; Mechanical</b>			
<b>Power consumption</b>	5.9W (max)		
<b>Temperature Range</b>	-40°C ~ 70°C (Operating temperature for PCE4552AH) --45°C ~ 90°C (Storage temperature)		
<b>Humidity (non-condensing)</b>	5%~90% typical		
<b>Dimensions</b>	30(W) * 50(L) * 4.1(H) mm		
<b>Weight</b>	TBD		
<b>Compliance Standard</b>			
<b>Radio Approvals</b>	Prescan only (FCC Part 15.247, 15.407 CE EN300.328, EN301.893)		
<b>MTBF</b>	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.

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.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

## **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 54cm 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 54 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 54 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: QXO-57G45". 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.

**Industry Canada statement:**

This device complies with RSS-210 of the Industry Canada 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

**Radiation Exposure Statement:**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 54cm between the radiator & your body.

**Déclaration d'exposition aux radiations:**

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 54cm de distance entre la source de rayonnement et votre corps.

**Caution :**

- (i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- (ii) high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

**Avertissement:**

- (i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

This device is intended only for OEM integrators under the following conditions: (For module device use)

- 1) The antenna must be installed such that 54 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.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée de telle sorte qu'une distance de 54cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 2 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

#### **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 Canada authorization is no longer considered valid and the IC 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 Canada authorization.

#### **NOTE IMPORTANTE:**

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur),

l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

## **End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 54 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 4141B-57G32".

## **Plaque signalétique du produit final**

Ce module émetteur est autorisé uniquement pour une utilisation dans un dispositif où l'antenne peut être installée de telle sorte qu'une distance de 54cm peut être maintenue entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 4141B-57G32".

## **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.

## **Manuel d'information à l'utilisateur final**

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.



## **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 54cm 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/IC 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.

## Instructions d'installation professionnelle

### 1. Installation

Ce produit est destiné à un usage spécifique et doit être installé par un personnel qualifié maîtrisant les radiofréquences et les règles s'y rapportant. L'installation et les réglages ne doivent pas être modifiés par l'utilisateur final.

### 2. Emplacement d'installation

En usage normal, afin de respecter les exigences réglementaires concernant l'exposition aux radiofréquences, ce produit doit être installé de façon à respecter une distance de 54 cm entre l'antenne émettrice et les personnes.

### 3. Antenne externe.

Utiliser uniquement les antennes approuvées par le fabricant. L'utilisation d'autres antennes peut conduire à un niveau de rayonnement essentiel ou non essentiel dépassant les niveaux limites définis par FCC/IC, ce qui est interdit.

### 4. Procédure d'installation

Consulter le manuel d'utilisation.

### 5. Avertissement

Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne dépasse pas les limites en vigueur. La violation de cette règle peut conduire à de sérieuses pénalités fédérales.

## **MAXIMUM POWER SETTING FOR EACH ANTENNA TYPE:**

### **Attention for all professional installer:**

Please make sure that system max output power will not exceed following max. certified power for each antenna type (for detail setting in each modulation and band, please refer to EMC test report power table).

#### **Antenna 1 WS-AO-DT05120N**

5180~5240MHz : 36.355mW, 5260~5320MHz : 220.712mW, 5500~5720MHz : 238.549, 5745~5825MHz : 990.182mW

#### **Antenna 2 WS-AO-5D23009N**

5180~5240MHz : 36.355mW, 5260~5320MHz : NA, 5500~5720MHz : NA, 5745~5825MHz : 83.198mW

#### **Antenna 3 WS-AO-DX13025N**

5180~5240MHz : 36.355mW, 5260~5320MHz : 60.705mW, 5500~5720MHz : 68.847, 5745~5825MHz :

272.678mW

**Antenna 4 WS-AO-DX10055N**

5180~5240MHz : 36.355mW, 5260~5320MHz : 126.102mW, 5500~5720MHz :144.868, 5745~5825MHz :  
628.878mW

**Antenna 5 Omni Stubby**

5180~5240MHz : 36.355mW, 5260~5320MHz : 220.712mW, 5500~5720MHz :2238.549,5745~5825MHz :  
553.649mW

**Antenna 6 Dipolle**

5180~5240MHz : 36.355mW, 5260~5320MHz : 178.028mW, 5500~5720MHz :179.694,5745~5825MHz :  
793.377mW

**Antenna 7 SuperPass SP-G2HJ2H-6L**

5180~5240MHz : 36.355mW, 5260~5320MHz : 178.028mW, 5500~5720MHz :179.694,5745~5825MHz :  
635.912mW