# User Manual

## Bointec Wifi Series
## DPE109A / DPE104A


**[ Version 1.0 ]**
**Date: 2018/09/12**



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## Release history:

| Revision | Date | Author | Change List |
|---|---|---|---|
| 1.0 | 2018/09/12 | Howard Juang | Initialized |
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**IMPORTANT NOTICE**

interference in which case the user will be required to correct the interference at him own expense.

## *Safety Precautions*

- **Warning!**

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronic personnel should open the PC chassis.

- **Caution!**

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

# Contents

# 1 Packing List

Before you use this Product, you may want to check what the items are inside the package:

- DPE109A / DPE104A module
- Accessory Pack (optional)
- 2.4GHz antenna, simple, Bointec P/N: TWRN-9161201-102
- Driver and User Manual CD

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

# 2 Customer Service

We provide service guide for any problem as follow steps：

- Contact with your distributor, sales representative always as first step, as they are able to provide you enough information to answer your question.
- Email to Bointec Customer Service, we stand behind first line services if they are not able to help you for some advanced technical issues or additional assistance.

You may have the following information ready before you inquiry for support：

- Product serial number
- Peripheral attachments
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

Free technical support is available from distributer and Bointec Customer Service every business

day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Do not hesitate to contact us, Supporting email address is available at : <*support@bointec.com*>

# 3 Safety and Warranty

Read these safety instructions carefully:

- Refer to this user manual from time to time if you need to know something more about the product. Keep this user manual document for later reference.
- Please disconnect this equipment from any power source before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
- For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Install this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- All cautions and warnings on the equipment should be noted.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
- Never pour any liquid into an opening. This could cause fire or electrical shock.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

- If any of the following situations arises, get the equipment checked by service personnel:
  A. The power cord or plug is damaged.
  B. Liquid has penetrated into the equipment.
  C. The equipment has been exposed to moisture.
  D. The equipment does not work well, or you cannot get it to work according to the user manual.
  E. The equipment has been dropped and damaged.
  F. The equipment has obvious signs of breakage.
- Generally, do not leave this equipment in an uncontrolled environment where the storage temperature is below -20° C (-4°F) or above 60° C (140° F). It may damage the equipment. Unless we describe it in the Specification, the product itself is an industrial grade product. Even if so, do not store the product that exceeds the limitation of the product endurance.



# 4 Introduction

This specification wrote as a guideline for DPE109A/DPE104A installation and apply to use. Any change will not process unless this document changed.

## 4.1 Product overview

Bointec DPE109A/DPE104A is a dual band 802.11ac/a/b/g/n Dual-Band WiFi + Bluetooth miniPCIe adapter. It is a 2T2R (WiFi/BT co-existence supported) technology, with 20/40/80MHz and 256-QAM to maximize bandwidth. DPE109A/DPE104A lets you move at the speed of life with faster speeds (up to 867 Mbps, 1~3Mbps EDR for Bluetooth), higher capacity, broader coverage and longer battery life. Dramatically reshapes your connected experience.

Bointec DPE109A/DPE104A incorporated with advanced security encryption, such as WEP, WPA,

WPA2, and 802.1x for secure wireless connection.

Bointec DPE109A/DPE104A also supports the latest Bluetooth 4.2 specification, which includes both High Speed and Low-Energy operation to extend personal area connectivity to a variety of devices.

DPE109A/DPE104A also delivers superior WLAN/Bluetooth coexistence to ensure the best possible wireless experience. DPE109A/DPE104A offers advanced algorithms developed to mitigate interference and takes advantage of the physical proximity of the WLAN and Bluetooth radios to provide maximum performance.

With the demand of industrial temperature, Bointec DPE104A, with component upgrade to higher tolerance, could meet the industrial standard reliability.

### 4.2 Reference Documents

- Bointec DPE109A DPE104A product speciation document

# 5 Mechanical Specification

### 5.1 Main Module

DPE109A / DPE104A module as below :


Figure 1. Top View


Figure 2. Bottom View

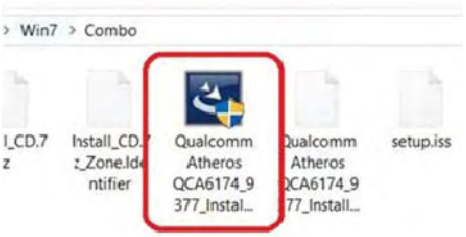
# 6 Installation

Please make sure the platform is turned off and insert the Wireless Adapter DPE109A/DPE104A into the mPCIe slot of your platform at a 45 degree.

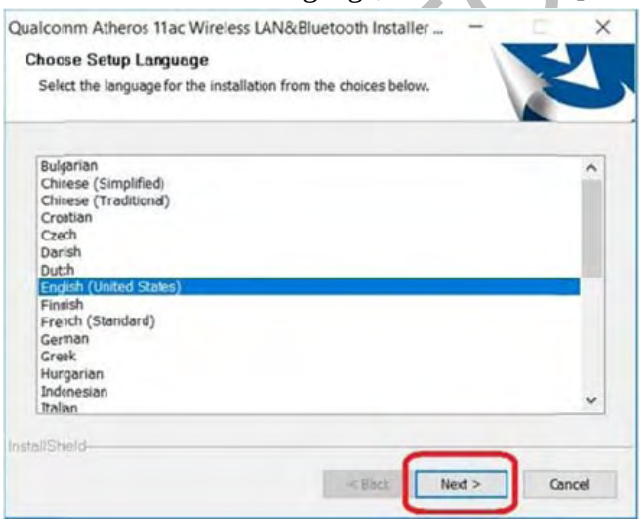
# 7 Software Installation

## 7.1 Driver installation under Windows systems

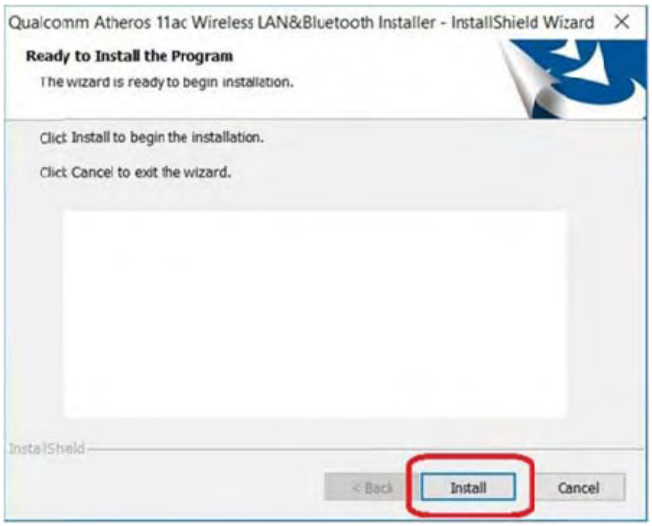
1.Click [Qualcomm Atheros QCA6174_9377_Installer].

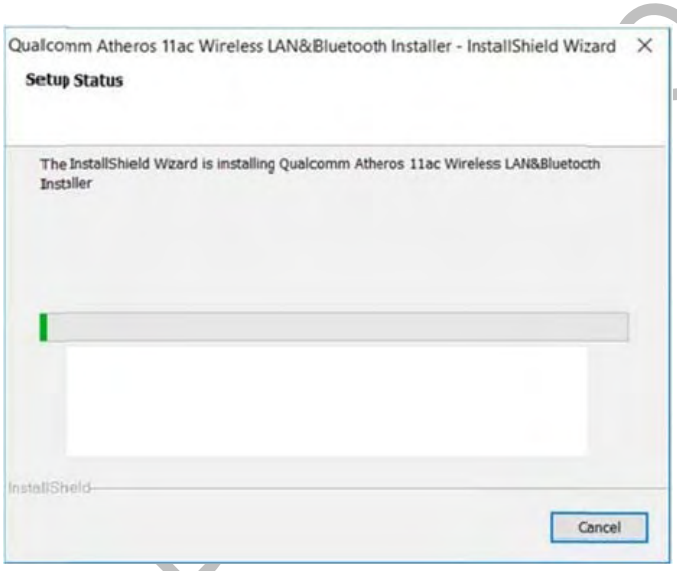


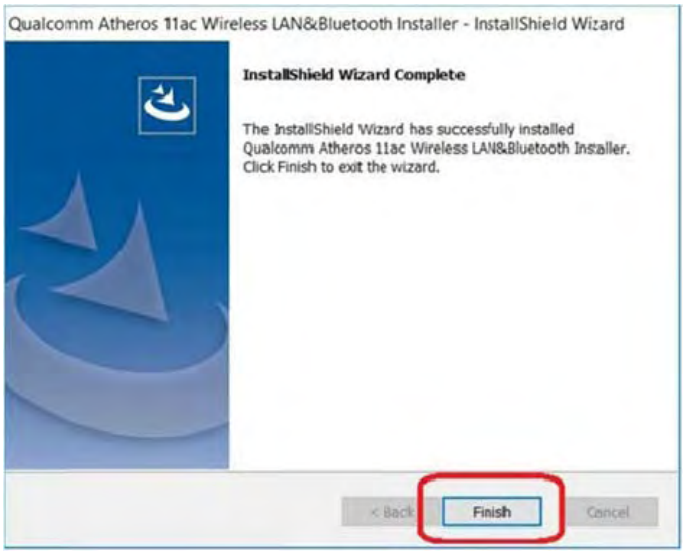

2.Select an interface language, and then click [Next].



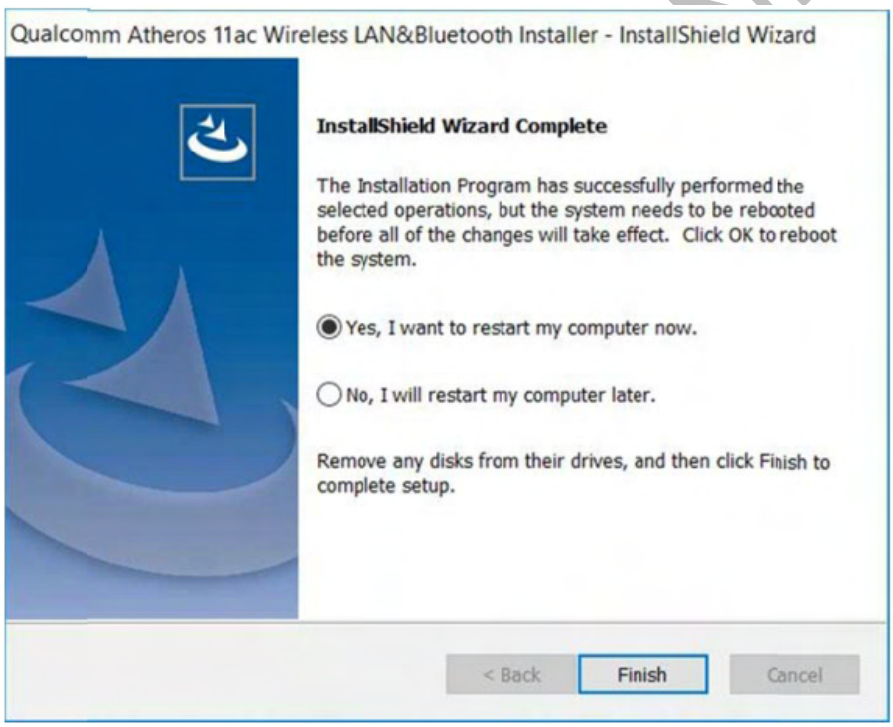
3.Click [Install] to begin the driver installation and follow Install SHield Wizard.





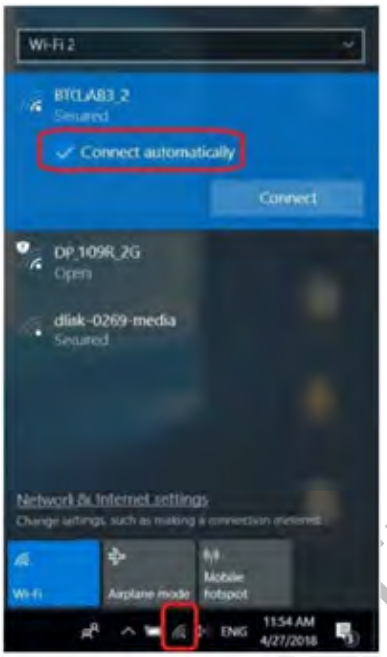

4.Click [Finish] to complete the installation.



### 7.2 Join a Wireless Network

1. Click [Network icon] on the task bar. Select your Wi-Fi network and click [Connect].

2. Enter the correct password of the network and click [Next].





3. When it shows [Connected] as the picture below, then you can enjoy wireless access to Internet now.


### 7.3 Driver pickup by Linux Android systems

Linux driver are provided for user who would like to install DPE109A / DPE104A under Linux/Android system. For these systems are usually used by experienced users. We simple attach driver package in the driver CD for experienced users to deploy. If you encounter any issue when install driver package or during the procedure, please contact Bointec filed application engineer team.

# Appendix A:



## Disclaimer

THESE MATERIALS AND INFORMATION ARE PROVIDED “AS IS” WITHOUT WARRANTY” OF ANY KIND, EITHER EXPRESS OR IMPLIED , INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT.

We uses reasonable efforts to include accurate and up-to-date information on this document; it does not, however, make any representations as to its accuracy or completeness of the information, text, graphics, links or other items contained within these materials. Your use of this Document is at your own risk. Bointec, its suppliers, and other parties involved in creating and delivering this Document’s contents shall not be liable for any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits.

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

1) The antenna must be installed such that 20 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 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: **2AMAF-DPE109A104A**”. 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 ISED's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée 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 ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with greater than 20cm between the radiator & your body.

**Déclaration d'exposition aux radiations:**

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

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

1) The antenna must be installed and operated with greater than 20cm 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 installé et exploité avec plus de 20 cm 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 and operated with greater than 20cm between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains IC: 23942-DPE109A104A”.

**Plaque signalétique du produit final**

Ce module émetteur est autorisé uniquement pour une utilisation dans un appareil où l’antenne peut être installée et utilisée à plus de 20 cm entre l’antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 23942-DPE109A104A ".

**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.

**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) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate;

(iv) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

**Avertissement:**

Le guide d’utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(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) pour les dispositifs munis d’antennes amovibles, le gain maximal d’antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e;

(iii) pour les dispositifs munis d’antennes amovibles, le gain maximal d’antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée, selon le cas;

(iv) lorsqu’il y a lieu, les types d’antennes (s’il y en a plusieurs), les numéros de modèle de l’antenne et les pires angles d’inclinaison nécessaires pour rester conforme à l’exigence de la p.i.r.e. applicable au masque d’élévation, énoncée à la section 6.2.2.3, doivent être clairement indiqués

## DETACHABLE ANTENNA USAGE

This radio transmitter (**IC: 23942-DPE109A104A / Model: DPE109A**) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain 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.

Le présent émetteur radio (**IC: 23942-DPE109A104A / Model: DPE109A**) a été approuvé par ISED pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Approved antenna(s) list

**Antenna Set 1**

| Transmitter Circuit | Brand | Model | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 5GHz Gain with cable loss (dBi) | 2.4GHz Cable Loss (dBi) | 5G Cable Loss (dBi) | Connector Type | Cable Length (mm) |
|---|---|---|---|---|---|---|---|---|---|
| Chain (0) | WNC | 81-EBJ15.005 | PIFA | 3.00 | Band 1&2: 2.56<br>Band 3: 4.76<br>Band 4: 4.76 | 1.15 | Band 1&2: 1.70<br>Band 3: 1.74<br>Band 4: 1.79 | IPEX | 300 |
| Chain (1) | WNC | 81-EBJ15.005 | PIFA | 3.62 | Band 1&2: 3.08<br>Band 3: 3.31<br>Band 4: 2.42 | 1.15 | Band 1&2: 1.70<br>Band 3: 1.74<br>Band 4: 1.79 | IPEX | 300 |

**Antenna Set 2**

| Transmitter Circuit | Brand | Model | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 5GHz Gain with cable loss (dBi) | 2.4GHz Cable Loss (dBi) | 5G Cable Loss (dBi) | Ant. Connector Type | Cable Length (mm) |
|---|---|---|---|---|---|---|---|---|---|
| Chain (0) | INPAQ | DAM-I6-H-DB-800-10-17 | Dipole | 1.13 | Band 1&2: 1.33<br>Band 3: -0.63<br>Band 4: -0.97 | 2.0±0.5 | 4.0±0.5 | SMA RP Plug | 900 |
| Chain (1) | INPAQ | DAM-I6-H-DB-800-10-17 | Dipole | 1.29 | Band 1&2: 1.94<br>Band 3: -0.49<br>Band 4: -0.93 | 2.0±0.5 | 4.0±0.5 | SMA RP Plug | 900 |

*The RF cable is use with antenna set 2

| Cable Spec. | | | | | |
|---|---|---|---|---|---|
| Brand | Model | 2.4GHz cable loss (dBi) | 5GHz cable loss (dBi) | Cable Length (mm) | Cable Connector Type |
| INPAQ | 14012-00040100 | -0.35 | -0.39 | 42 | IPEX to SMA RP Plug |

**Antenna Set 3**

| Transmitter Circuit | Brand | Model | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 5GHz Gain with cable loss (dBi) | Connector Type | Cable Length (mm) |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain (0) | Molex | 479504012 | Dipole | 2.13 | 2.81 | I-PEX MH4 | 300 |
| Chain (1) | Molex | 479504012 | Dipole | 2.13 | 2.81 | I-PEX MH4 | 300 |

**Antenna Set 4**

| Transmitter Circuit | Brand | Model | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 5GHz Gain with cable loss (dBi) | Ant. Connector Type |
|---|---|---|---|---|---|---|
| Chain (0) | BOINTEC | TWRN-9161202-101 | Dipole | 2.0 | 2.0 | RP SMA |
| Chain (1) | BOINTEC | TWRN-9161202-101 | Dipole | 2.0 | 2.0 | RP SMA |

*The RF cable is use with antenna set 4

| Cable Spec. | | | | | |
|---|---|---|---|---|---|
| Brand | Model | 2.4GHz cable loss (dBi) | 5GHz cable loss (dBi) | Cable Length (mm) | Cable Connector Type |
| Bointec | TWRB-003EQ01-210 | 0.27 | 0.21 | 210 | IPEX to RP SMA |

**Antenna Set 5**

| Transmitter Circuit | Brand | Model | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 5GHz Gain with cable loss (dBi) | Ant. Connector Type |
|---|---|---|---|---|---|---|
| Chain (0) | BOINTEC | TWRN-9161201-102 | Dipole | 3.17 | 2.61 | RP SMA |
| Chain (1) | BOINTEC | TWRN-9161201-102 | Dipole | 3.17 | 2.61 | RP SMA |

*The RF cable is use with antenna set 5

| Cable Spec. | | | | | |
|---|---|---|---|---|---|
| Brand | Model | 2.4GHz cable loss (dBi) | 5GHz cable loss (dBi) | Cable Length (mm) | Cable Connector Type |
| Bointec | TWRB-003EQ01-300 | 0.3 | 0.24 | 300 | IPEX to RP SMA |

Note:

1. Above antenna gains of antenna are Total (H+V).