

## **2.4 / 5 GHz 1000mW WLAN Booster**

WBT-1000/1000A

Quick Installation Guide

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## **FCC Regulation**

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.

## **Revision**

Quick Installation Guide for PLANET 2.4 / 5 GHz WLAN Booster

Model: WBT-1000/1000A

Rev: 2.0 (June, 2009)

Part No. EMQ-WBT1000v2

# WBT-1000

## Package Contents

The following items should be included:

- Outdoor Wireless Amplifier Unit x 1
- DC Injector Unit x 1
- Mounting Kit x 1
- 30 cm male RP-SMA to male N type cable x 1
- Quick Installation Guide x 1
- Power Adapter x 1

If any of the above items are damaged or missing, please contact your dealer immediately.

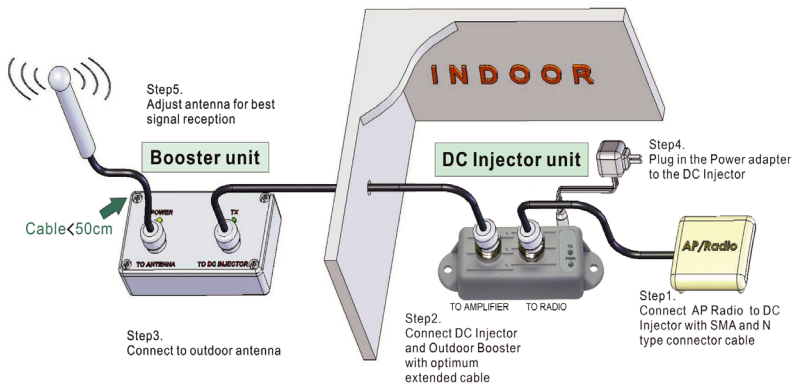
## Specifications

|                             |   |
|-----------------------------|---|
| <b>Operating Range</b>      | 2400~2500 MHz   |
| <b>Operating Mode</b>       | Bi-directional, half-duplex, auto-switching via carrier sensing                                   |
| <b>Connector Type</b>       | N-type, female (50 ohm)   |
| <b>RF Input power</b>       | 0~15dbm<br><b><u>Warning: Input power more than 15 dBm may breakdown the power amplifier.</u></b> |
| <b>Transmit Gain</b>        | 18dB  |
| <b>Output Power</b>         | 1W (30 dBm)   |
| <b>Receiver Gain</b>        | 15 dB   |
| <b>Noise Figure</b>         | 3.5dB   |
| <b>Frequency Response</b>   | ± 1 dB over operating range   |
| <b>DC Power Input</b>       | 9V DC, 2.0 A  |
| <b>Operating Temp.</b>      | -20 to +70°C  |
| <b>Operating Humidity</b>   | Up to 95% relative humidity   |
| <b>Material</b>             | Cast Aluminum   |
| <b>Lightning Protection</b> | Direct DC ground at antenna connector   |
| <b>DC Surge Protection</b>  | At DC input from transmission cable   |
| <b>LED</b>                  | DC Power (Yellow), Transmit Active (Green)  |
| <b>Outdoor Unit (cm)</b>    | 10.8 cm (L) x 6.8 cm (W) x 3.0 cm (H)   |
| <b>DC Injector (cm)</b>     | 10.2cm (L) x 3.6cm (W) x 2.6cm (H)  |
| <b>Weight</b>               | 345g (Booster) / 96g (DC Injector)  |

## Features

- High Gain, High Value and High Performance/ Auto Gain Signal Booster
- Amplify and AP's radio signal to 30dBm
- Make broadband wireless application in possible coverage
- Increase AP's receiving sensitivity up to -100dB
- Increasing radio communication range by providing transmit gain as well as low-noise receive gain.
- Aluminum case construction/weather-proof/ Lightning protection
- Strength radio signal to increase the effective range and coverage area for Wi-Fi communication.
- Simply attach the DC Injector with 2.4GHz radio signal input plus the DC power feed to the outdoor unit and N type antenna.
- The outdoor booster increase range by providing transmit gain as well as low noise receive gain.
- The benefit for signal booster can save lots of wiring costs and easy to build wireless infrastructure for home or business use

## Hardware Installation



- Step 1: Connect AP Radio to DC injector with 30 cm male RP-SAM to male N type cable.
- Step 2: Connect DC Injector and Outdoor Booster Unit with optimum length extend cable (<50 meters).
- Step 3: Connect the Outdoor Booster Unit and the Antenna with RF cable (<50 cm).
- Step 4: Plug in the power adapter to the DC Injector Unit.
- Step 5: Adjust antenna for best signal reception.



Note

1. Make sure the TX power of the AP Radio follow the required RF power input.
2. Please connect antenna before power on, also do not disassemble antenna while operating, otherwise, it will cause the device damage.

# WBT-1000A

## Package Contents

The following items should be included:

- Outdoor Wireless Amplifier Unit x 1
- DC Injector Unit x 1
- Mounting Kit x 1
- 30 cm male RP-SMA to male N type cable x 1
- Quick Installation Guide x 1
- Power Adapter x 1

If any of the above items are damaged or missing, please contact your dealer immediately.

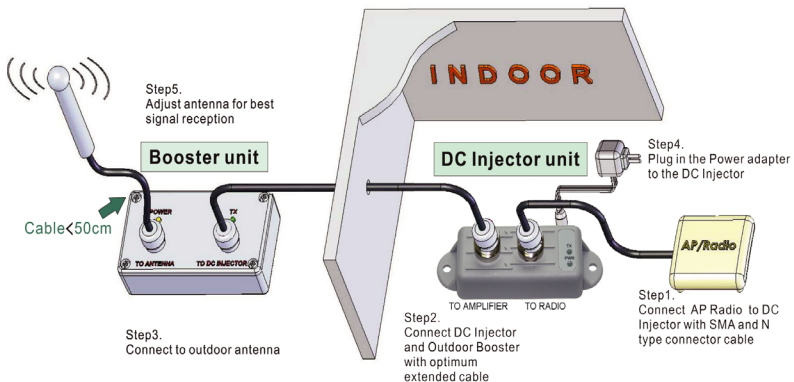
## Specifications

|                             |   |
|-----------------------------|---|
| <b>Operating Range</b>      | 5150 ~ 5850 MHz   |
| <b>Operating Mode</b>       | Bi-directional, half-duplex, auto-switching via carrier sensing                                   |
| <b>Connector Type</b>       | N-type, female (50 ohm)   |
| <b>Input power</b>          | 0~15dbm<br><b><u>Warning: Input power more than 15 dBm may breakdown the power amplifier.</u></b> |
| <b>Output Power</b>         | 1W (30 dBm)   |
| <b>Receiver Gain</b>        | 15 dB typical   |
| <b>Noise Figure</b>         | 5 dB typical  |
| <b>Frequency Response</b>   | ± 1 dB over operating range   |
| <b>DC Power input</b>       | 9V DC, 2.0 A  |
| <b>Operating Temp.</b>      | -20 to +70°C  |
| <b>Operating Humidity</b>   | Up to 95% relative humidity   |
| <b>Material</b>             | Cast Aluminum   |
| <b>Lightning Protection</b> | Direct DC ground at antenna connector   |
| <b>DC Surge Protection</b>  | At DC input from transmission cable   |
| <b>LED</b>                  | Transmit Active (Green)   |
| <b>Outdoor Unit (cm)</b>    | 11.5cm (L) x 6.5cm (W) x 4.8cm (H)  |
| <b>DC Injector (cm)</b>     | 10.2cm (L) x 3.6cm (W) x 2.6cm (H)  |
| <b>Weight</b>               | 345g (Booster) / 96g (DC Injector)  |

## Features

- High Gain, High Value and High Performance/Auto Gain Signal Booster
- Amplify and AP's radio signal to 30dBm or more
- Make broadband wireless application in possible coverage
- Increase AP's receiving sensitivity up to -100dB
- Increasing radio communication range by providing transmit gain as well as low-noise receive gain.
- Aluminum case construction/weather-proof/Lightning protection
- Strength radio signal to increase the effective range and coverage area for Wi-Fi communication.
- Simply attach the DC Injector with 5GHz radio signal input plus the DC power feed to the outdoor unit and N type antenna.
- The outdoor booster increase range by providing transmit gain as well as low noise receive gain.
- The benefit for signal booster can save lots of wiring costs and easy to build wireless infrastructure for home or business use

## Hardware Installation



Note

For WBT-1000A Booster Unit, Please face the LED Indicator down when installation.



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- Step 1: Connect AP Radio to DC injector with 30 cm male RP-SAM to male N type cable.
- Step 2: Connect DC Injector and Outdoor Booster Unit with optimum length extend cable (<50 meters).
- Step 3: Connect the Outdoor Booster Unit and the Antenna with RF cable (<50 cm).
- Step 4: Plug in the power adapter to the DC Injector Unit.
- Step 5: Adjust antenna for best signal reception.



Note

1. Make sure the TX power of the AP Radio follow the required RF power input.
2. Please connect antenna before power on, also do not disassemble antenna while operating, otherwise, it will cause the device damage.

## Preparations

In order to obtain the best performance of booster and system, user must calculate the transmission power to meet the booster technical requirement and FCC regulations. Please follow the calculation below:

1. Convert power of the radio device from milliwatt to dBm.



Note

$10 * \text{Log (milliwatt)}$

2. Estimate the attenuation of cable (please refer to manufacturer's specifications)



Note

It is suggested that the cable loss between booster and DC injector should not exceed 10 dBm.

### General Cable Attenuation List

|  | LMR400 | LMR600 | LMR900 |
|--|--------|--------|--------|
| <b>dB loss per meter</b>               | 0.221  | 0.144  | 0.098  |
| <b>Suggested max. cable length (m)</b> | 45.24  | 69.44  | 102.04 |

3. Calculate the actual power of booster in the pole as follow:

Radio Device Power (dBm) – Cable Loss (dBm) – Misc. Loss = Input Signal Level (dBm)



Note

Misc. Loss means loss of connector, adapter and DC injector and estimates to be around 2 dB.

4. When the input signal level exceeds the Receiver Input Power of booster, the booster can't identify the input signal. Under this circumstance, user should lower the input signal level to fit the requirement such as using an attenuation pad or a higher loss cable and vice versa.

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## ***Troubleshooting***

If there is no signal output, please check the following item:

1. Check whether the LED indicator on the DC injector is on. If not, it means there is problem with the power component.
  - (1) Check if the power cord is correctly connected with the power adapter and the power outlet.
  - (2) Check if there is electricity on power outlet.
2. Check if the radio device is working properly.
3. Check if the connection between booster and DC injector is correct, or whether the connector is loose or not.
4. Verify if the transmit power which calculated before is correct.
5. If none of the above measures could solve the issue, please contact the supplier for further support.

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