tp-link

PHAROS

WBS210/WBS510

For technical support, User Guide and other information, please visit
http://www.tp-link.com/support, or simply scan the QR code.

Installation Guide

Outdoor Wireless Base Station

Contents

Overview

TP-Link's Outdoor Wireless Base Stations of the Pharos series products are designed for outdoor wireless network solutions, aiming at long-distance transmission and large coverage of wireless network.

Package Contents
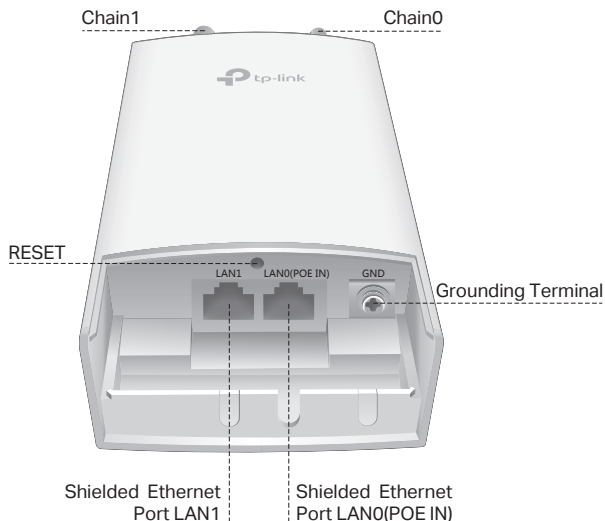

Base Station

Passive PoE Adapter

Power Cord

Metal Strap

Waterproof Rubber Insert

Installation Guide

Panel Layout

The panel of Base Station

Chain1   Chain0

tp-link

RESET

LAN1   LAN0(POE IN)   GND

Grounding Terminal

Shielded Ethernet   Shielded Ethernet
Port LAN1   Port LAN0(POE IN)

LED Explanation

AP/AP Router mode: All four LEDs remain solid.
Client/Bridge/Repeater/AP Client Router mode:
The more lit LEDs indicate the better wireless signal strength.

LAN1
LAN0
On: The port is connected but not active.
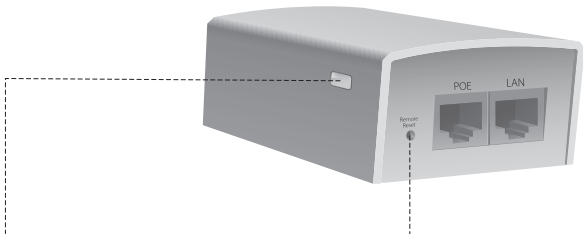**Flashing:** The port is transmitting data.

POWER
On: The Base Station is powered on.

Passive PoE Adapter

Power LED:
The Power LED indicates the
status of the electric current:
Green: 0-0.8A , Red: 0.8-1A

Remote Reset:
Press and hold for 8 seconds to
reset the Base Station to its
factory defaults.

Hardware Installation

The Outdoor Wireless Base Stations require external antenna
that corresponds to your network environment. It is
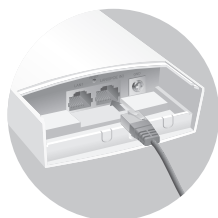recommended to buy and use TP-Link's matching antennas.

Connect Cables

Step1:

Firmly grasp the rear of the interface cover and pull it downward.

Step2:

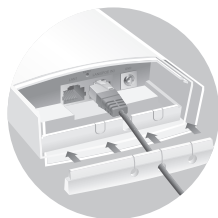Use an adequate Ethernet cable to connect the LAN0 (POE IN) port. The length of cable is up to 60m for steady power supply. Shielded CAT5e (or above) cable with an integrated ground wire is recommended.
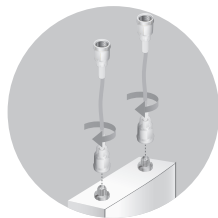

Step3:

Affix the waterproof rubber insert to the underside of the device for waterproofing and replace the cover until it firmly locks into place.

Step4:

Connect the RF Cables to the Base Station.

Mount Base Station

Mount the Base Station on an antenna with a suitable mounting bracket or on a pole for the antenna without the mounting bracket.

Option1: Mounting the Base Station on an Antenna

Note: Sector antenna is used as a demonstration below.

Step1:

Align the mounting tabs on the back of the Base Station with the four slots of the mounting bracket. Push and slide the Base Station downward until it locks into place.

Step2:

Connect the RF cables from the Base Station to the corresponding connectors on the antenna.
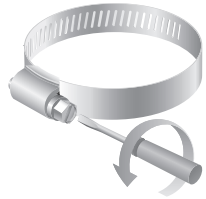

Step3:

Attach the protective cap. Push and slide the protective cap down over the Base Station until it firmly locks into place.

Option 2: Mounting the Base Station on a Pole

Step1:

Loosen and completely remove the
end of the metal strap by turning the
captive screw counterclockwise with a
flathead screwdriver.

Step2:

Lead the end of the metal strap
through the back of the Base Station.
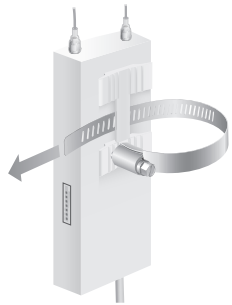
Step3:

Position the Base Station and wrap
the metal strap around the pole. Feed
the end back through the screw-block
and turn the screw clockwise to
tighten the metal strap using a
flathead screwdriver until the Base
Station is secure.
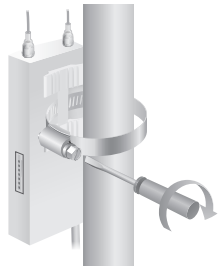
Step4:

Connect the RF cables from the Base Station to the
corresponding connectors on the antenna.

Power On
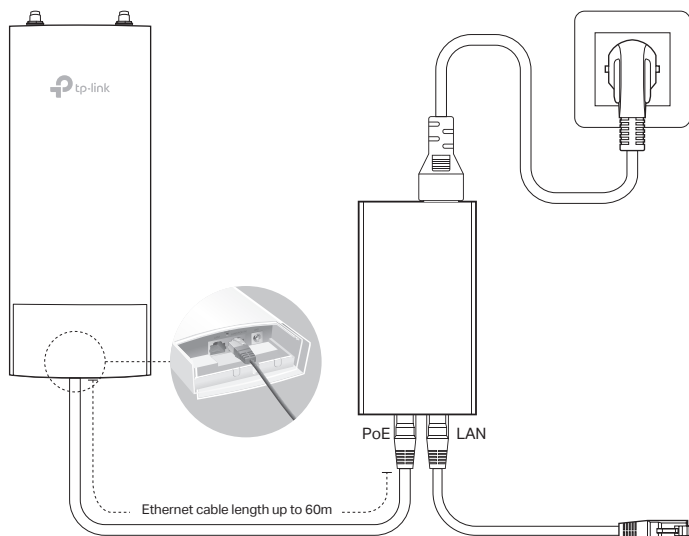
Connect the Base Station to a Power over Ethernet (PoE) adapter as follows:

Step1:
Connect the Ethernet cable from the Base Station to the POE port of the PoE adapter.

Step2:
Connect an Ethernet cable from your LAN device (a computer, router or switch) to the LAN port on the PoE adapter.

Step3:
Connect the power cord to the power port on the PoE adapter and plug it into an electrical outlet.

Lightning and ESD Protection

Proper grounding is extremely important for outdoor devices. There are two effective techniques for grounding the Base Station.

Option A

Use a shielded CAT5e (or above) cable with an integrated grounding wire for connection.

Option B

If you have the standard CAT5e cable for the connection, use a separate grounding cable to connect the grounding Terminal (GND) to earth ground.

Base Station

Grounding Terminal

Grounding Wire

Ⓐ Shielded CAT5e (or above) Cable with an Integrated Grounding Wire

Grounded 3-wire Power Outlet

Ⓑ Grounding Cable

Grounded PoE Adapter

Earth Ground
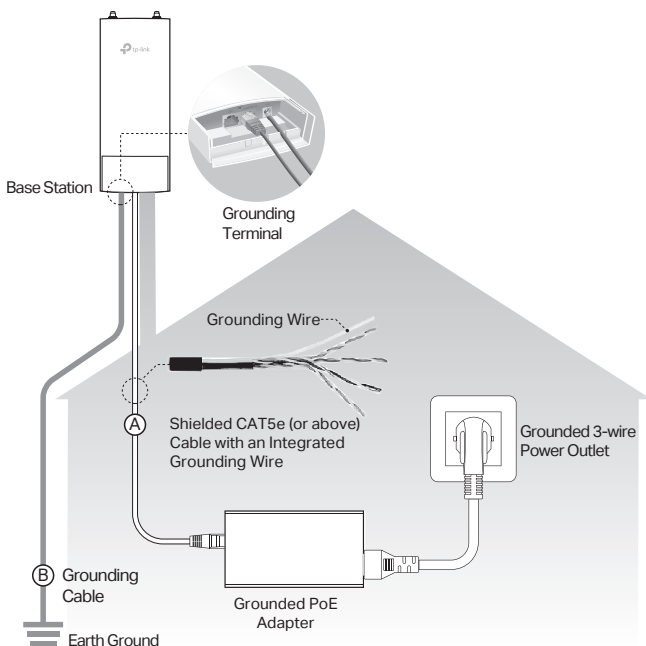
Configuration with PharOS

Based on your network needs, this section will guide you through the Base Station configuration using PharOS, a web-based management system that allows you to do more specific configurations.

Log in to the PharOS

1. Before accessing the PharOS Web Interface, you need to assign a static IP address 192.168.0.X (X ranges between 2 and 253, e.g. 192.168.0.10) to your computer.
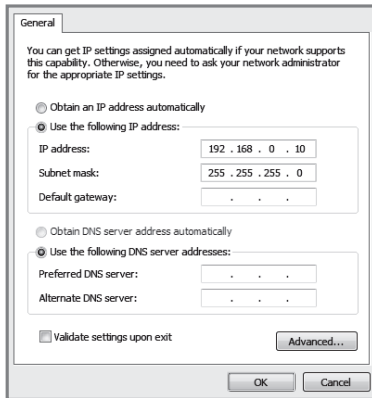
2. Open a web browser, type http://192.168.0.254 into the address field and press Enter (Windows) or return (Mac). It is recommended to use the latest version of Google Chrome, Firefox or Safari.

3. Enter **admin** for both **User Name** and **Password**, then select the **Language** from the drop-down list. Read and agree the terms of use, then click **Login**.

4. Change the default User Name and Password to protect your Base Station. Let's start configuring the Base Staion.
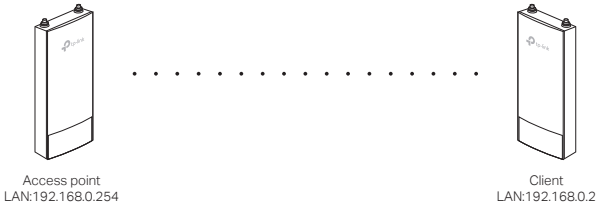
⚠ For subsequent logins, use the new username and password.

Configure the Base Station

The typical topology is as follows. A wireless bridge is built between two locations that are far from each other. Follow the instructions below to configure the Access Point and the Client.

Access point
LAN:192.168.0.254

Client
LAN:192.168.0.2

Configure the Access Point (AP)

1. Log in to PharOS and go to the Quick Setup page.
2. Operation Mode: Select **Access Point** and click **Next**.
3. LAN Settings: Click **Next**.
4. Wireless AP Settings:
   a. Create a new SSID (Network name) for your wireless network.
   b. Select **WPA-PSK/WPA2-PSK** for the Security method and create a PSK Password to protect your AP.
   c. Enter the distance between the Access Point and the Client into the Distance Setting field.
   d. Select the **MAXtream** checkbox (Refer to Q2 in FAQ for details about MAXtream), and click **Next**.
5. Finish: Verify your settings and click **Finish** to complete the configuration.

Configure the Client
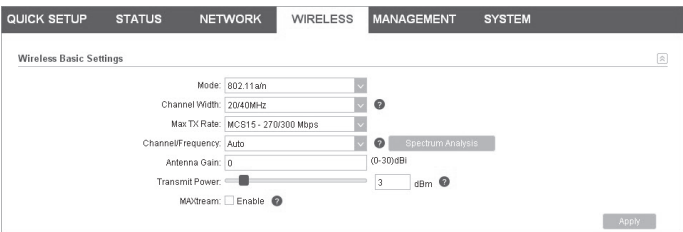
1. Log in to PharOS and go to the Quick Setup page.
2. Operation Mode: Select **Client** and click **Next**.
3. LAN Settings: Change the IP Address to 192.168.0.X (X ranges between 2 and 253), the same subnet with the access point, and click **Next**.
4. Wireless Client Settings:
   a. Click **Survey** and select the SSID of the Access Point in the AP list, then click **Connect**.
   b. Select **WPA-PSK/WPA2-PSK** from the Security option, enter the same PSK password and distance value of the Access Point, then click **Next**.
5. Finish: Verify your settings and click **Finish** to complete the configuration.

Installer Compliance Responsibility

Devices must be professionally installed and it is the professional installer's responsibility to make sure the device is operated within local country regulatory requirements.

Since PharOS can be paired with a variety of antennas, the Antenna Gain and Output Power fields are provided to the professional installer to assist in meeting regulatory requirements.

Specification

Dimensions	198*74*40mm
Interface	LAN0 (POE IN): 10/100Mbps Ethernet port LAN1: 10/100Mbps Ethernet port GND: Grounding terminal for lightning protection RESET: Button to restore the device to its factory defaults Chain0/Chain1: 2 RP-SMA antenna interfaces
Power Supply	24V passive PoE adapter included
Connector	RP-SMA Female
ESD Protection*	15kV
Lightning Protection*	Up to 6kV
Operating Temperature	-40℃ to 70℃ (-40℉ to 158℉)
Operating Humidity	10% to 90%
Certification	CE, FCC, RoHS, IP65
802.11 Standards	11b/g/n (WBS210) 11a/n (WBS510)

* Estimation is based on copper grounding cable and shielded CAT5e(or above) cable with an integrated grounding wire.

FAQ

Q1. How to restore the Base Station to its factory default settings?

With the Base Station powered on, press and hold the RESET button on the Base Station or the Remote Reset button on the passive PoE adapter for about 8 seconds until the Wireless Signal Strength LEDs flash.

Q2. What is Pharos MAXtream?

Pharos MAXtream is a proprietary protocol developed on the basis of Time Division Multiple Access (TDMA) by TP-Link.

The MAXtream technology has the following advantages:

- Eliminates hidden node collisions & improves channel efficiency.
- Lower latency, higher throughput, larger network capacity & more stability.
- Improves the QoS for video, voice and sound data stream.

By dividing the timing of transmission into different time slots, MAXtream allows the Pharos devices to transmit in rapid succession, one after another, each using its own time slot to transmit and receive they own frames, which greatly reduces the chance of collision.

Pharos MAXtream is a non-standard Wi-Fi protocol that is only compatible with TP-Link's Pharos series products. Please notice that you will not be able to connect other Wi-Fi devices to an AP with MAXtream enabled.

Q3. How can I use Spectrum Analysis to find the appropriate channel for the devices?

1. Log in to PharOS, click **Spectrum Analysis** in the tools drop-down list, a window will pop up to remind you that all wireless connections will be lost during spectrum analysis. Click **Yes** to continue to the Spectrum Analysis page.
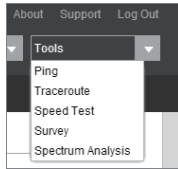
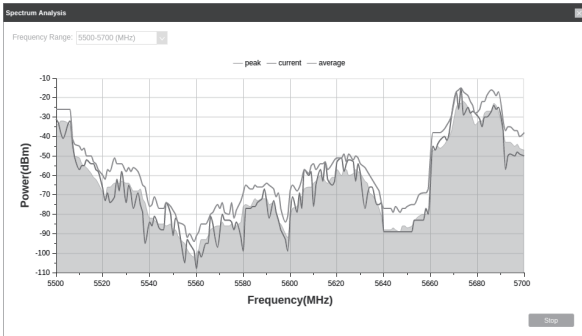

2. Click **Start**, the PharOS will begin to analyze the power of frequency. Observe the curves for a period of time, and then click stop. Note that the relatively low and continuous part of the average curve indicates less radio noise. Here, we use the figure below as an example.

Note:

The select box of Frequency Range at the top-left corner is only available for WBS510. Select the desired range and then click Start.

3. When choosing channel/frequency, you should avoid the spectrum with large radio noise. In this example, the recommended channel/ frequency is 112/5560MHz.

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device,pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. Thisequipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
"To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

CE Mark Warning

RF Exposure Information

This device meets the EU requirements (1999/5/EC Article 3.1a) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

$C\epsilon$**1588**

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

IC STATEMENT

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Canadian Compliance Statement

Canadian Compliance Statement
This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:
1） This device may not cause interference, and
2） This device must accept any interference, including interference that may cause undesired operation of the device.
This radio transmitter (IC: 8853A-WBS210/Model: WBS210 and IC: 8853A-WBS510/Model: WBS510) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type 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.

Model	WBS210 (8853A-WBS210)	WBS510 (8853A-WBS510)
Antenna	2 dBi omni (50 ohm)	3 dBi omni (50 ohm)
	15 dBi sector (50 ohm)	19 dBi sector (50 ohm)

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
1） l'appareil ne doit pas produire de brouillage;
2） l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.
Cet émetteur radio (IC: 8853A-WBS210/Model: WBS210 and IC: 8853A-WBS510/Model: WBS510) a été approuvée par Industrie Canada pour l'exploitation avec l'antenne types énumérés ci-dessous avec le gain maximal admissible et requis l'impédance de l'antenne pour chaque type d'antenne indiqué. Types d'antenne non inclus dans cette liste, ayant un gain supérieur au gain maximal indiqué pour ce type, sont strictement interdits pour une utilisation avec cet appareil. Immédiatement suite à la remarque, le fabricant doit fournir une liste de tous les types d'antenne approuvé pour une utilisation avec l'émetteur, ce qui indique le gain
maximal d'antenne permis (en dBi) et requis d'impédance pour chacun.

Model	WBS210 (8853A-WBS210)	WBS510 (8853A-WBS510)
Antenna	2 dBi omni (50 ohm)	3 dBi omni (50 ohm)
	15 dBi sector (50 ohm)	19 dBi sector (50 ohm)

Pour réduire le risque d'interférence aux autres utilisateurs, le type d'antenne et son gain doivent être choisies de façon que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas ce qui est nécessaire pour une communication réussie.

Caution (For WBS510)

1）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;
2）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 specified for point-to-point and non-point-to-point operation as appropriate.

Avertissement (For WBS510)

1）Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
2）Le gain maximal d'antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant la bande 5725-5850 MHz doit se conformer à la limitation P.I.R.E spécifiée pour l'exploitation point à point et non point à point, selon le cas.

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 20cm 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 20 cm de distance entre la source de rayonnement et votre corps.

Industry Canada Statement

CAN ICES-3 (A)/NMB-3(A)

 EAC

Safety Information

- When product has a power button, the power button is one of the way to shut off the product; When there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.

- Don't disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.

- Avoid water and wet locations.

- [i] Use only power supplies which are provided by manufacturer and in the original packing of this product. If you have any questions, please don't hesitate to contact us.

NCC Notice & BSMI Notice

注意！

依據 低功率電波輻射性電機管理辦法
第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性或功能。
第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通行；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機需忍受合法通信或工業、科學以及醫療用電波輻射性電機設備之干擾。

安全諮詢及注意事項

請使用原裝電源供應器或只能按照本產品注明的電源類型使用本產品。
• 清潔本產品之前請先拔掉電源線。請勿使用液體、噴霧清潔劑或濕布進行清潔。
• 注意防潮，請勿將水或其他液體潑灑到本產品上。
• 插槽與開口供通風使用，以確保本產品的操作可靠並防止過熱，請勿堵塞或覆蓋開口。
• 請勿將本產品置放於靠近熱源的地方。除非有正常的通風，否則不可放在密閉位置中。
• 請不要私自打開機殼，不要嘗試自行維修本產品，請由授權的專業人士進行此項工作。
此為甲類資訊技術設備，于居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

For EU/EFTA, this product can be used in the following countries (For WBS510):
AT / BE / BG / CH / CY / CZ / DE / DK / EE / ES / FI / FR / GB / GR / HR / HU / IE / IS / IT / LI / LT / LV / MT / NL / NO / PL / PT / RO / SE / SI / SK

Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.

Explanation of the symbols on the product label

Symbol	Explanation
⎓	DC voltage
	RECYCLING This product bears the selective sorting symbol for Waste electrical and electronic equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19/EU in order to be recycled or dismantled to minimize its impact on the environment. User has the choice to give his product to a competent recycling organization or to the retailer when he buys a new electrical or electronic equipment.

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。　　　　　　　　　　VCCI-A