

Wireless LAN Card WLI-CF-S11G User's Manual

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■ Precautions for radio signals

- The wireless LAN card WLI-CF-S11G has been approved for conformity to the engineering standards as the wireless facility for a radio station with the low power data communication system based on the Wireless Telegraphy Act. Therefore, use of this LAN card does not require any radio station license. The WLI-CF-S11G is allowed to be used in Japan only.
- Never use the WLI-CF-S11G near the magnetic field around a microwave oven or in an area where static electricity and/or radio noise is generated. The radio signals may not be normally transmitted in these areas.
 - * When the WLI-CF-S11G is used near a wireless printer buffer (BUFFALO's RYP-G or similar products by other manufacturers) that use radio signals around 2.4 GHz, the processing speed of both devices may be adversely affected.
- As the WLI-CF-S11G has been approved for conformity to the engineering standards, the following may be regarded as unlawful.
 - Disassembling/remodeling the WLI-CF-S11G
 - Removing the approval label from the rear of the WLI-CF-S11G
- When it is necessary to set a radio channel other than the initial setting in the WLI-CF-S11G, use the same frequency band as the following equipment or wireless stations
 - Industrial, scientific, or medical equipment
 - Radio station for mobile identification used such as on a manufacture line in a factory
 - ① On-premise radio station (requiring a license)
 - ② Specific low power radio station (requiring no license)
- Operating the WLI-CF-S11G may cause interference with the above equipment or radio stations. Thus, take precautions for the following points
 - 1 Before using the WLI-CF-S11G, verify that no on-premise radio station for mobile identification or no specific low power radio station is operating near the WLI-CF-S11G.
 - 2 If an event of interference should be taken place by the WLI-CF-S11G with an on-premise radio station for mobile identification,

immediately change the frequency for this product to prevent the interference.

- 3 If you notice any trouble such as an event of interference caused by the WLI-CF-S11G with a specific radio station for mobile identification, contact your nearest sales representative.

Operating frequency band	2.4GHz
Modulation method	DS-SS
Assumed interference distance	40 m or less
Frequency changeability	Uses the entire bandwidth, and can avoid the "on-premise radio station" and "specific lower power radio station" bands.

Foreword

Thank you for purchasing BUFFALO's wireless LAN card WLI-CF-S11G. The WLI-CF-S11G is installed for wireless LAN communication in computers equipped with a CompactFlash slot (type II) or PC card slot (type II).



Read this manual carefully before using the wireless LAN card to ensure correct operation.

■ For your safety, be sure to follow the instructions given below.







The following describes the instructions to avoid harming yourself, other people, and properties, and to ensure safe operation of this product. Be sure to read and understand them thoroughly before using this product. This manual also contains instructions concerning general operation of the computer system to which this product is connected as well as those concerning the product.

Please take note that our warranty will not cover any failures and problems of the computer, any losses and failures of data, or failures and problems of this product caused by misuse.

Meanings of warning signs

 Warning	Failure to follow the instructions shown with this sign may result in a hazard or serious injury to the user.
 CAUTION	Failure to follow the instructions shown with this sign may result in injury to the user or property damage.

■ Meanings of symbols

	This indicates warnings and cautions. Specific instructions are given in or around \triangle . (E.g.,  Exercise care to avoid an electric shock.)
	This indicates prohibited matters. Specific instructions are given in or around \circ . (E.g.,  Do not disassemble.)
	This indicates compulsory rules. Specific instructions are given in or around \bullet . (E.g.,  Disconnect the plug from the receptacle.)



WARNING



No
disassembly

Do not disassemble or modify the product.
It may cause fire or electric shock.



Unplugging

Turn off the power to the computer and peripheral devices immediately and unplug them if you drop the product or it receives a severe physical shock.
If you continue using them under such circumstances, a short circuit resulting in fire or electric shock may occur. Please contact your nearest sales representative.



Compulsory

Be sure to observe instructions by manufacturers of personal computers and peripherals when installing and using this product.



Unplugging

Turn off the power to the computer and peripheral devices immediately and unplug them if smoke or heat is generated.
If you continue using them under such circumstances, a short circuit resulting in fire or electric shock may occur. Please contact your nearest sales representative.



CAUTION



Compulsory

Never touch this product with wet hands when the power cable of this product is connected to the power outlet. It will cause electric shock.



Compulsory

Touch something made of metal (a door knob or aluminum window frame, for example) and release static electricity before touching the product to avoid damage caused by static electricity.

Static electricity generated around the human body may damage this product or delete or damage digital data.



Compulsory

Follow the local rules or regulations when disposing of this product.

Inquire of your local government about the applicable rules or regulations.



Compulsory

Be sure to create backup files on other media (floppy disk, MO disk, etc.) for your data on the hard disk.

We recommends that you create two backup copies of critical data, one before and one after the original data is updated. Data may be deleted or damaged when

- Data may be deleted or damaged when:
- Incorrect operation is performed.
- Data is affected by static electricity or electrical noise.
- Hardware is mechanically damaged or under maintenance.
- Your computer is turned on immediately after being turned off.
- Hardware is damaged in a natural disaster.


Note that We shall not be liable for any damages arising from loss or damage of digital data in any case.

Using this manual


The following describes the notational conventions used in this manual. Please use care for the marks and notations to use this manual effectively.

■ Editorial marks and notations


Caution mark

 **Caution** Describes cautions when handling the product. If these instructions are not observed, injuries or mechanical damage may occur.

Note mark

 **Note** Describes supplementary information or items which should be understood when handling the product.

Reference mark

 **Reference** Indicates the page(s) containing related information.

- Descriptions enclosed by square brackets [] apply to the name of a menu, button, textbox, or checkbox to be selected during operation.
- Descriptions enclosed by double quotation marks " " primarily apply to the software, dialog box, message, or a title of a section to be referenced during operation.
- As a general rule, this manual primarily refers to the BUFFALO's wireless LAN card as the WLI-CF-S11G, a packet PC or handheld PC with Windows CE as a Windows CE device, and a personal computer with Windows Me/98/2000 as a Windows computer.
- As a general rule, this manual refers to a Windows CE device and a Windows computer each equipped with the BUFFALO's wireless LAN card as a wireless LAN computer.
- This manual clearly distinguishes between a cabled 10BASE-T/100BASE-TX LAN and a non-cabled LAN as follows

Wired LAN·····LAN connected by cables

Wireless LAN···LAN using wireless communication

Note that these are not general terms and are used only for descriptions in this manual.

- All rights for this manual are owned by BUFFALO. No part of this manual may be transmitted, reproduced, or revised without permission from BUFFALO.
- Product names of other companies used in this manual are trademarks or registered trademarks of the respective companies.
Trademark symbols ™, ®, © are not indicated in this manual.
- Specifications, design, and other descriptions included in this manual are subject to change without notice.

This manual is carefully prepared, however, feel free to contact your nearest sales representative if you have any questions or problems.

This product should be used as a general OA device in offices or at home. BUFFALO does not accept any liability if the product is used other than as a general OA device.

- Do not use this product for any device or system which requires high safety such as a medical device or any system which is directly or indirectly related to maintaining human life.
- If this product is used for any device or computing system which requires more reliability than general OA devices, please make sure that you take any necessary actions to ensure safety and prevent system malfunctioning.
- Be sure to follow the operation method described in this manual. In particular, never use this product in such a way as violating the method described as a caution.

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MEMO

Chapter 1

Before Operation

■ Overview

This chapter contains the outline of the product and the contents of the package. Be sure to read them so that you can smoothly proceed with the preparatory operations without trouble.



1.1 Product Outline

- About wireless LAN card WLI-CF-S11G10 p
- Wireless LAN network configuration 12 p

1.2 Contents of Package and Component Names

1.1 Product Outline

Please be aware of the following points before using the wireless LAN card WLI-CF-S11G.

■ About the wireless LAN card WLI-CF-S11G

The wireless LAN card WLI-CF-S11G is installed for use in computers equipped with a Compact Flash slot (type II) or PC card slot (type II).

Features

- 2.4 GHz low power data communication system (certification not required).
- Direct sequence spread spectrum (DS-SS) technology ensures high noise resistance.
- IEEE802.11b compliant, with a data rate of 11 Mbps even on a wireless LAN.
- Effective range is shown below;
 - 11 Mbps transmission: 160 m outdoors (estimated)
 - 50 m indoors (1) (estimated)
 - 25 m indoors (2) (estimated)
 - 2 Mbps transmission: 400 m outdoors (estimated)
 - 90 m indoors (1) (estimated)
 - 40 m indoors (2) (estimated)
 - 1 Mbps transmission: 550 m outdoors (estimated)
 - 115 m indoors (1) (estimated)
 - 50 m indoors (2) (estimated)
- ※ Indoors (1):Office with few obstacles
Indoors (2):Office with many obstacles
- ※ The effective range is adversely affected by the operating environment. It may be reduced in the following locations.
 - Within a reinforced concrete building such as a condo, or a house with a metal frame
 - Near large metal furniture

- 40-/128-bit WEP compatible. (For more information, see "About WEP (Wired Equivalent Privacy) - Recommendation of Encryption -" on page 13.)
- ※ When using 128-bit WEP, all access points need to be compatible with the 128-bit WEP. (40-bit WEP and 128-bit WEP cannot be used at the same time.)

The WLI-CF-S11G card can be used in computers with the compatible operating systems listed below.

Applicable Computers

Personal computers equipped with a Compact Flash slot (type II) or PC card slot (type II) listed below.

- Pocket PC
- Handheld PC
- IBM AT compatible PC (OADG compliant)
 - ※ Installation of the card in a PC card slot (type II) requires the BUFFALO's card adapter WLI-CF-OP available separately.



- BUFFALO's print server LSP Series and network diagnostic tool NetSeeker are not supported.
- The Suspend/Resume feature is not supported.
- Dual-processor machine is not supported.

Operating System

- ※ Windows CE3.0 (Handheld PC 2000, Packet PC), Windows ME/98/2000
- ※ The ACPI feature in Windows Me/98/2000 is not supported.

■ Wireless LAN network configuration

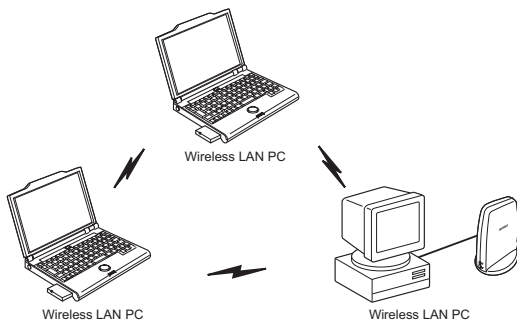
The following two methods are available for PC communications with the wireless LAN card.

Note This product can communicate with BUFFALO's LAN products, third-party wireless LAN products with Wi-Fi certified, and AirMac(*).

※ Communication with AirMac requires BUFFALO's AirStation.

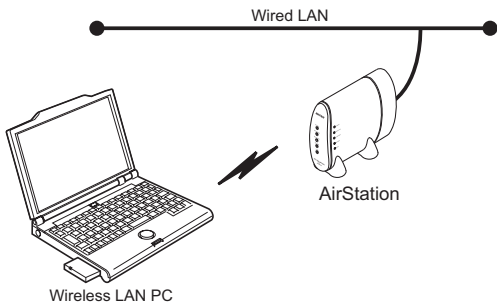
<<Communicating with wireless LAN computers>>

You can configure the wireless LAN only network of the wireless LAN computers with BUFFALO's wireless LAN cards/adapters.



« Communicating via AirStation »

You can connect to the Internet or communicate with computers on the wired LAN via BUFFALO's AirStation.



■ WEP (Wired Equivalent Privacy) - Recommendation of Encryption

Since the wireless LAN card communicates using radio waves, radio packets could be intercepted and analyzed outside. To ensure transmission security, it is recommended to set a password called 'WEP' in the radio packets during communication.

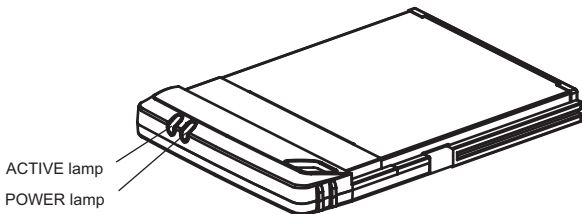
This card allows two types of WEP; 40-bit WEP and 128-bit WEP. Setting 128-bit WEP (13 alphabetic characters or 26 hex digits) assures higher security. However, when communicating with a wireless LAN product compatible only with 40-bit WEP (5 alphabetic characters or 10 hex digits), it is necessary to set the 40-bit WEP in this product.

※ For the WEP (encryption) setting in the AirStation, refer to the manual included in the AirStation.

1.2 Contents of Package and Component Names

The items listed below are included in the package. Please check the package and contact your nearest sales representative if any items are missing.

- Wireless LAN card 1



Name	Function
POWER lamp	ON (green): During operation
ACTIVE lamp	ON (green): During data send/receive

- AirStation Driver CD 1
- WLI-CS-S11G User's Manual (this document) 1
- User registration card, warranty 1

- Note** • Be sure to read any additional information sheets provided in the package.

Chapter 2

Windows CE Settings

■ Overview

This chapter describes how to make the settings for connecting your Windows CE device to a wireless LAN.

.....

2.1 Making the Wireless LAN Card Available

- Step 1** Before installing the wireless LAN card 18 p
- Step 2** Installing the wireless LAN card drivers 18 p
- Step 3** Installing the wireless LAN card 20 p

2.2 Preparing for Connecting to the Network

- Step 4** Checking the "IP address" 21 p

2.3 Connecting to the Network

- Step 5** -a Communicating via AirStation 23 p
- Step 5** -b Communicating with wireless LAN computers 27 p

Follow the procedure in the illustration below to connect your Windows CE device to a wireless LAN.

Making the wireless LAN card available (from page 18)

Step 1

Connect a Windows computer and your Windows CE device via Microsoft Active-Sync.

Step 2

Install the wireless LAN card drivers in the Windows computer.

Preparing for connecting to the network (from page 21)

Step 4

Check the "IP address."

Connecting to the network (from page 23)

Step 5 -a, b

Make the settings for access to the network.

- a. AirStation
- b. Wireless LAN computers

Step 3

Install the wireless LAN card in the Windows CE device.

To make the AirStation settings, refer to the AirStation manual.

2.1 Making the Wireless LAN Card Available

Install the wireless LAN card to connect your Windows CE device to a wireless LAN.

Step 1 Before installing the wireless LAN card


Microsoft ActiveSync

Connect the Windows CE device and the Windows computer using Microsoft ActiveSync so that you can install the wireless LAN card drivers. For how to use ActiveSync, refer to the manual included in the Windows CE device.

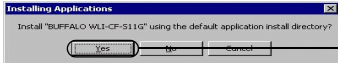
Step 2 Installing the wireless LAN card drivers

Follow the procedure below to install the wireless LAN card drivers.

- 1 Insert the "AirStation Driver CD" into the CD-ROM drive of the Windows computer.

 **Caution** When you insert the "AirStation Driver CD" into the CD-ROM drive, the Simple Installation Wizard window may automatically appear. In this case, click [Cancel], and then [Abort], closing the window.

- 2 Double-click the [CFS11G] folder in the CD-ROM, and then the [CESETUP] file.

- 3  **1 Select**
Click [Yes].

- 4 When the message "Application Downloading Complete" appears, click [OK].

Note The message "Please check your mobile device screen to see if additional steps are necessary to complete this installation." appears, but you do not need to do so here.

- 5 Turn off the Windows CE device.

Now you have completed the installation of the wireless LAN card drivers.

Step 3 Installing the wireless LAN card

Install the wireless LAN card in the Compact Flash slot (type II) of the Windows CE device.

CAUTION 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 5cm between the radiator & your body. This transmitter must be co-located or operating in conjunction with any other antenna or transmitter.

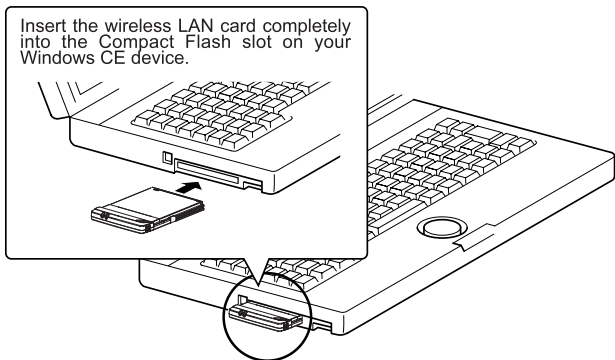


Precautions for installation/removal

- Be sure to handle the Windows CE device and its peripherals in such a way as described in the manual of each unit.
- Make sure that the Windows CE device is turned off before installing/removing the wireless LAN card in/from that device.
- Completely remove any dust from the connectors.
- Never touch the connector portion of the wireless LAN card.
- Use great care for the connector location of the wireless LAN card when installing the card in the Windows CE device. The connector may be damaged if it is forced.

Installing the wireless LAN card in the Windows CE device

Follow the instructions in the illustration below when installing the wireless LAN card in the Windows CE device.



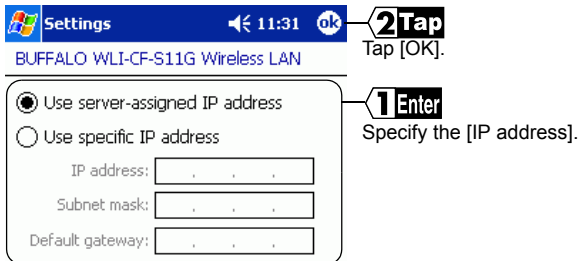
2.2 Preparing for Connecting to the Network

After installing the wireless LAN card in the Windows CE device, prepare for connecting to the network.

Reference For detailed information, refer to the manual included in the Windows CE device or open the Windows CE Help.

Step 4 Checking the "IP address"

- 1 When the wireless LAN card is successfully installed, the Windows CE device is automatically turned on to display the window shown below.



- When a DHCP server exists within the network (e.g., when the DHCP server function of the AirStation is used), select [Use server-assigned IP address].
- To manually set the IP address, select [Use specific IP address]. Inquire the IP address, Subnet mask, and Default gateway from your network administrator.

⇒ Continued on next page

- For the IP address setting, see "I don't know how to assign the IP address" on page 113 in Chapter 5.



If Wireless LAN Card is not operating normally, the message of the meaning "Input the device driver name of this card." is displayed.

Refer to "**Step 2** Installing the wireless LAN card drivers" and install driver again.

To make the AirStation settings

With the AirStation manual, make the AirStation settings on a wireless LAN computer excepting a Windows CE machine.

To directly connect to the wireless LAN

Make the settings on the Windows CE device according to **Step 5** on page 23 and subsequent.

2.3 Connecting to the Network

Upon completion of necessary settings, you can connect to the network. There are two methods for connecting the Windows CE device to the network as shown below.

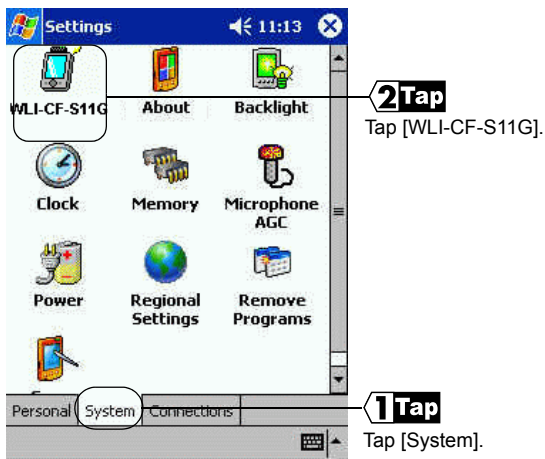
- Communicating via AirStation **Step 5** -a
- Communicating with wireless LAN computers **Step 5** -b

Step 5 -a Communicating via AirStation

To make communications using the AirStation, make the settings in the Window CE device as described below.

1 Select [Start]-[Settings].

2



⇒ Continued on next page

3



Profile: Default

Mode: Infrastructure

SSID: ANY

Transmit Rate: Fully Automatic

Power Save Enabled

AdHoc Channel: 11

Defaults

Undo

Apply

1 Enter

Make a configuration if necessary.

2 Tap

Tap [Apply].



The settings are saved with a text typed in the [Profile] field as a name.

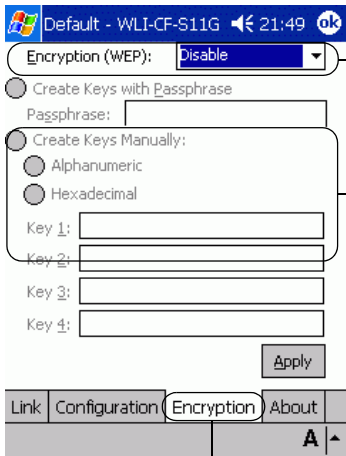
Select Infrastructure for [Mode].

Input the ESS-ID of the target AirStation to [SSID]. The initial setting of the AirStation ESS-ID shows the last six digits of the MAC address of the AirStation plus "GROUP" (upper-case).

Select Fully Automatic for [Transmit Rate].

Do not put a checkmark for [Power Save Enabled] as it may disable normal communication.

4

**2 Select**

Select the WEP type (40-bit or 128-bit) if encryption with WEP is used in the network. If the AirStation is still in the initial state, no encryption is set. Select Disable in this case.

3 Enter

Select [Create Keys Manually] and input an encryption key to the Key 1 field.

- To use a hexadecimal value, directly input to the Key 1 field.
- To use a character string, tap [Alphanumeric] (see below).

1 Tap

Tap [Encryption].

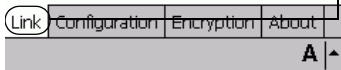
5 Tap [Apply].

⇒ Continued on next page

6

**2 Check**

You can check the wireless-side MAC address, current radio channel, current transmission rate, data communication status, link quality, and signal strength of the connected AirStation. When "Associated" appears for the [State], the connection to the AirStation is successfully complete.

**1 Tap**

Tap [Link].

Note


If you cannot communicate with the AirStation, check the ESS-ID and WEP settings of the AirStation, and then repeat from Step 1.

Step 5 -b Communicating with wireless LAN computers

When communicating with wireless LAN computers using Microsoft ActiveSync, it is necessary to make the Windows CE device settings shown below.

1 Select [Start]-[Configure].

2



The screenshot shows the Windows CE Settings application. The title bar displays the Windows logo, the word "Settings", the time "11:13", and a close button. The main area contains a grid of settings icons: WLI-CF-S11G, About, Backlight, Clock, Memory, Microphone AGC, Power, Regional Settings, and Remove Programs. At the bottom, there is a navigation bar with three tabs: "Personal", "System", and "Connections". The "System" tab is currently selected. A callout box labeled "2 Tap" points to the "WLI-CF-S11G" icon with the text "Tap [WLI-CF-S11G]". Another callout box labeled "1 Tap" points to the "System" tab with the text "Tap [System]".

⇒ Continued on next page

3



Profile: **Default**

Mode: Pseudo AdHoc

SSID: ANY

Transmit Rate: Fully Automatic

Power Save Enabled

AdHoc Channel: 11

Defaults Undo Apply

1 Enter

Make a configuration if necessary.

2 Tap

Tap [Apply].



The settings are saved with a text typed in the [Profile] field as a name.

Select Pseudo AdHoc for [Mode].

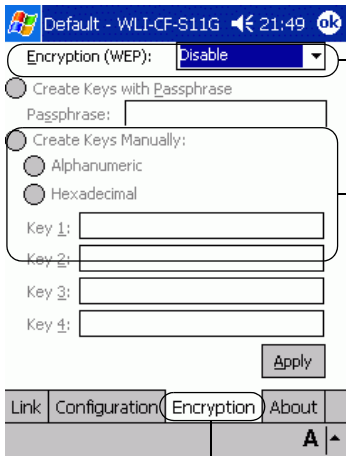
You do not have to input data to [SSID].

Select Fully Automatic for [Transmit Rate].

Do not put a checkmark for [Power Save Enabled] as it may disable normal communication.

Select the same channel as the communicated wireless LAN computers for [AdHoc Channel].

4

**2 Select**

Select the WEP type (40-bit or 128-bit) if encryption with WEP is used in the network. If the AirStation is still in the initial state, no encryption is set. Select Disable in this case.

3 Enter

Select [Create Keys Manually] and input an encryption key to the Key 1 field.

- To use a hexadecimal value, directly input to the Key 1 field.
- To use a character string, tap [Alphanumeric] (see below).

1 Tap

Tap [Encryption].

《To use a character string for the encryption key》

The window shown below appears.

1. Input a character string to the [encryption key] field.
2. Tap [OK].

3. The window in Step 4 appears.

5 Tap [Apply].

⇒ Continued on next page

6

3 Tap
Tap [OK].

2 Check
You can check the connection mode (AdHoc), current radio channel, current transmission rate, and data communication status.
The link quality and signal strength will not be displayed.

1 Tap
Tap [Link].

Now you can communicate with the computers set in the same radio channel.

Reference For the ActiveSync setting, refer to the ActiveSync manual or Help.