Contents

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Dual Intelligent Processors 4

Dual Intelligent Processors 4 comes with these five utilities in one interface:
4-Way Optimization, TPU, EPU, DIGI+ Power Control, and Fan Xpert 2.

4-Way Optimization

The 4-Way Optimization utility allows you to automatically tweak the TPU, EPU, DIGI +
Power Control and Fan Xpert 2 to their optimal settings.

Select an advanced power saving mode

Click to auto-detect the best settings based on actual usage

DO NOT remove your fan during the tuning process.

TPU

ASUS TPU allows you to manually adjust the CPU frequency, CPU Cache and Core frequencies, DRAM frequency, and related voltages for an enhanced system stability and boost performance.

⚠️ Refer to the CPU documentation before adjusting CPU voltage settings. Setting a high voltage may damage the CPU permanently, and setting a low voltage may lead to an unstable system.

✎ For system stability, all changes made in TurboV will not be saved to BIOS settings and will not be kept on the next system boot. Use the Save Profile function to save your customized overclocking settings and manually load the profile after Windows starts.

Using TPU

CPU Frequency

Click ◀ or ▶ to adjust the Base Clock Frequency, CPU Ratio, and CPU Ring Ratio

Click ▶ or ◀ to select the number of cores to adjust

Click to apply the adjustments

Click to load the saved profile

Click to save the adjustment into a profile

Tick to enable Group Tuning

Click to enable the default settings

Click to undo the adjustments

✎ • Set the CPU Ratio Setting item in BIOS to **[Auto]** before using the CPU Frequency in TPU. Refer to the BIOS chapter of your motherboard user manual for details.

• The CPU Frequency bars show the status of the CPU cores, which vary with your CPU model.

Voltage

Drag ▲ to adjust CPU Core Voltage offset

Drag ▲ to adjust CPU Cache Voltage offset

Click to apply the adjustments

Click to undo the adjustments

Click to load the saved profile

Click to save the adjustment into a profile

Drag the slider to adjust DRAM, CPU Analog I/O, PCH, and CPU Input voltages

Drag the slider to adjust CPU System Agent, CPU Digital I/O, VTTDDR, and PCHVLX voltages

GPU Boost

Drag ▲ to adjust the iGPU Max Voltage

Click ◄ or ► to adjust the CPU VCCSA voltage

Click to apply the adjustments

Click to undo the adjustments

Click to load the saved profile

Click to save the adjustment into a profile

Click to enable the default settings

• The overclocking result varies with the CPU model and the system configuration.

• We recommend that you set up a better thermal environment to prevent overheating from damaging the motherboard.

EPU

EPU is an enery-processing utility that allows you to adjust the CPU, GPU, and Fan Control settings to their power-saving conditions.

Using EPU

Click to configure the settings in Auto mode   **Click to configure the settings in High Performance mode**   **Click to configure the settings in Max Power Saving mode**   **Click to configure the settings in Away mode**

Tick to select a setting for Voltage Decrement

Click ◀ or ▶ to adjust the configured Max CPU Power

Click ▼ to select a fan profile

Tick to select a setting for Add-on USB ports power

Click to enable the default settings   **Click to undo the adjustments**   **Click to apply the adjustments**

• When you enable Configured Max CPU Power for advanced energy saving condition, the CPU frequency may display 800 MHz in the Windows® OS information of your computer. However, the true CPU frequency varies depending on the wattage that you manually set. You can adjust the CPU wattage from the lowest base to your preferred default value.

• Configured Max CPU Power may decrease the total power delivery to the CPU and affects the CPU performance under system heavy load. To restore your system to its default settings, reboot your computer.

DIGI+ Power Control

DIGI+ Power Control allows you to adjust the VRM voltage and frequency for optimal system efficiency, overall system stability and performance.

CPU Power

You can configure the following CPU Power items:

- **CPU Power Duty Control**

    CPU Power Duty Control adjusts the current of every VRM phase and the thermal conditions of every phase component.

- **CPU Load-line Calibration**

    CPU Load-line Calibration adjusts the voltage range and controls the system temperature. Higher load-line calibration could get higher voltage and good overclocking performance but increases the CPU and VRM thermal conditions.

- **CPU Current Capability**

    CPU Current Capability provides wider total power range for overclocking. A higher value setting gets higher VRM power consumption delivery.

- **CPU Power Thermal Control**

    A higher temperature brings a wider CPU power thermal range, and extends the overclocking tolerance to enlarge overclocking potential.

- **CPU Power Phase Control**

    CPU Power Phase Control allows you to get more transient and better thermal performance by increasing the phase number under heavy system loading. To increase VRM efficiency, reduce the phase number under light system loading.

    * The system automatically sets the default to [Extreme] when using the Intel® iGPU.

- **CPU Voltage Frequency**

    CPU Voltage Frequency affects the VRM transient response and thermal components. Higher VRM frequency gets quicker transient response.

DRAM Power

You can configure the following DRAM items:

- **DRAM Power Phase Control**

    Select Extreme for full phase mode to increase system performance or select Optimized for ASUS optimized phase tuning profile to increase DRAM power efficiency.

- **DRAM Current Capability**

    A higher value brings a wider total power range and extends the overclocking frequency range simultaneously.

- **DRAM Voltage Frequency**

    Allows you to adjust the DRAM switching frequency for system stability or to increase OC Range.

- The actual performance boost may vary depending on your CPU specification.

- Do not remove the thermal module. The thermal conditions must be monitored.

Fan Xpert 2

Fan Xpert 2 automatically detects and tweaks the fan speeds, and provides you with optimized fan settings based on the fans' specifications and positions.

Using Fan Xpert 2

Click a screen to select the type of fan that you want to customize

Click to set the fan's speed to silent mode

Click to maximize the fan speed

Click to set the balanced configuration between the fan's noise level and speed

Click to switch between CPU and chassis fan screens

Click to increase the fan's speed for a high cooling capability

Customizing the fan settings

Smart Mode

Smart Mode allows you to customize the fans' rotation speeds and responsiveness based on your system's temperature.

Click and drag to set the fan's rotation speed

Click and drag the sliders to adjust the fan's responsiveness

Click to go back to the previous screen

Click to switch between the CPU and chassis fan screens

Click to undo the changes

Click to apply the changes

RPM Mode

RPM Mode allows you to set the fan speed when the CPU temperature is below 75°C.

Click and drag to adjust the fan's speed

Click to go back to the previous screen

Click to switch between the CPU and chassis fan screens

Click to undo the changes

Click to apply the changes

- When the CPU temperature reaches 75° C, the fan will automatically run at full speed to protect the CPU.

- For motherboard models without the CPU fan detection latch, only 4-pin CPU fans are controllable in Fan Xpert 2.

- The Fan Xpert 2 may not be able to detect the fan speed if your fan is installed with an external control kit for rotation speed.

- Fan Xpert 2 does not support 2-pin fans. If you install a 2-pin fan, it can only run at its full speed.

- If the CPU or chassis fans have been changed, the Fan Auto Tuning process should be repeated.

DO NOT remove your fan during the Fan Auto Tuning process.

Wi-Fi GO! Card

The Wi-Fi GO! card is an easy-to-use wireless LAN adapter that allows you to connect to a wireless LAN in a single network. With the Wi-Fi GO! card, you can also use your system as an access point for other Wi-Fi supported devices.

By default, the Wi-Fi GO! card is already installed on your motherboard. To locate the Wi-Fi GO! card, refer to section **Motherboard rear and audio connections** of your motherboard manual.

The Wi-Fi standard of 802.11ac will be restricted by countries' regulations. Wi-Fi 802.11ac feature will be supported under the complete 11ac eco-system environment.

ASUS Wi-Fi GO! card specifications

Bluetooth v4.0/3.0 + HS Wi-Fi 802.11 a/b/g/n/ac version

Wi-Fi Standard	IEEE 802.11 a/b/g/n/ac
Bluetooth standard	Bluetooth v4.0/3.0 + HS
Data rate	802.11ac (HT80*) up to 867Mbps, 802.11n(HT40*) up to 300Mbps, 802.11n(HT20) up to 150Mbps, 802.11a up to 54Mbps, 802.11b up to 11Mbps, 802.11g up to 54Mbps *** When using Wi-Fi Engine in AP mode, the channel bandwidth is limited to HT20 and with a maximum data rate of 150 Mbps due to Windows® limitation.**
Security	WEP, WPA & WPA2* *** Use WPA2 or open system to reach 65Mbps and above.**
Network architechture types	AP Mode Client mode
Frequency band	2.4GHz & 5GHz ISM radio band
Operating range	**Wi-Fi:*** Outdoor up to 300 meters Indoor up to 100 meters *** The transmission speed may vary according to the environment** **Bluetooth:** 10 - 20 meters (depends on the environment)
Antenna	Antenna 1: Wi-Fi Tx/Rx Antenna 2: Wi-Fi Tx/Rx + Bluetooth 1 x ASUS 2T2R dual band Wi-Fi moving antenna (with SMA connector)
LED	**Wi-Fi:** Green LED: Wi-Fi enabled LED off: Wi-Fi disabled **Bluetooth:** Blue LED: Bluetooth enabled LED off: Bluetooth disabled Blinking blue LED: Data activity
Support OS	32-bit / 64-bit Windows® 7, 32-bit / 64-bit Windows® 8
ASUS special features	ASUS Wi-Fi Engine ASUS Wi-Fi GO!

* The specifications are subject to change without notice.

ASUS Wi-Fi GO! card specifications

Bluetooth v4.0/3.0 + HS Wi-Fi 802.11 a/b/g/n version

Wi-Fi Standard	IEEE 802.11 a/b/g/n
Bluetooth standard	Bluetooth v4.0/3.0 + HS
Data rate	802.11n(HT40*) up to 300Mbps 802.11n(HT20) up to 150Mbps 802.11a up to 54Mbps 802.11b up to 11Mbps 802.11g up to 54Mbps ***** **When using Wi-Fi Engine in AP mode, the channel bandwidth is limited to HT20 and with a maximum data rate of 150 Mbps due to Windows® limitation.**
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Support OS	32-bit / 64-bit Windows® 7, 32-bit / 64-bit Windows® 8
ASUS special features	ASUS Wi-Fi Engine ASUS Wi-Fi GO!

* The specifications are subject to change without notice.

The Wi-Fi GO! card varies by models. Refer to your motherboard manual for the Wi-Fi GO! card specification.

Installation

System requirements

To use the Wi-Fi GO! card, ensure that your system meets the following requirements:

1. 32-bit / 64-bit Windows® 7, 32-bit / 64-bit Windows® 8

2. DVD Optical drive

3. ASUS support DVD containing the Wi-Fi GO! card driver

4. ASUS AI Suite 3 utility

> • Ensure to install the bundled Wi-Fi antenna connector to the Wi-Fi GO! card ports.
>
> • To install ASUS AI Suite 3 utility, refer to the section **AI Suite 3** of your motherboard user manual for more details.

Installing Wi-Fi GO! card driver

> The contents of the support DVD are subject to change without notice. Visit the ASUS support site at http://support.asus.com for driver or utilities updates.

To install Wi-Fi GO! card driver:

1. Place the support DVD on the optical drive. If Autorun is enabled in your computer, the DVD automatically displays the installation wizard.

2. Click **Drivers** tab then click **ASUS Bluetooth 4.0 Wi-Fi Driver**.

3. Follow the onscreen instructions to complete the installation.

4. After the installation is completed, restart your computer.
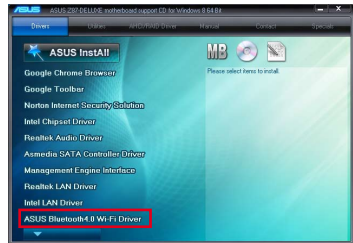
Wi-Fi GO! card utilities

With Wi-Fi GO! card, you can use the following utilities found in the ASUS AI Suite 3 utility:

• **Wi-Fi Engine:** Allows you to connect to a wireless network and to set up your computer as an access point for Internet connection sharing among Wi-Fi enabled devices.

• **Wi-Fi GO!:** Provides you with a range of multimedia playback control and home cloud computing environment.

> For Wi-Fi GO! functions, refer to section **Wi-Fi GO!** in this user manual for more details.

Using Wi-Fi Engine

To use Wi-Fi Engine, click ▼ on the top edge of the screen, then click **Wi-Fi Engine** on the AI Suite 3 main menu bar.

Click to connect to a wireless access point

Click to set up your computer as a wireless access point

Using the Client Mode

The Client mode allows you to connect your system to a wireless access point or a host router.

To use the client mode:

1. On the Wi-Fi Engine menu, click **Client Mode** to launch Network Connections.

2. From the Network Connections window, double-click to select a network adapter.
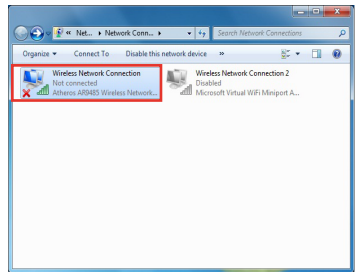
2. From the list of available networks, click to select a network that you want to connect to.

    Some networks may require you to key in a password.
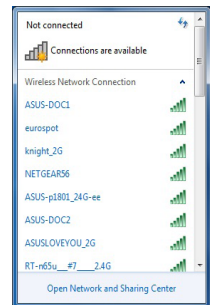
Using the AP Mode

The AP mode allows you to set your system as an access point for other wireless-enabled devices.

To use AP mode, click **AP Mode** on the Wi-Fi Engine menu.

Key in a network name

Key in your password

Key in your password for confirmation

Click to disable AP mode

Click to enable AP mode

Click to go back to previous screen

Click to select a network connection

- In this mode, the Internet Connection Sharing may depend on the Bluetooth/Internet device's driver support.

- Due to Windows® 8 limitation, it may take one to two minutes to set up the AP mode for the first time.

Wi-Fi GO!

Wi-Fi GO! is an ASUS-exclusive Wi-Fi utility that allows you to wirelessly stream your media files to DLNA devices, control your computer using your smart device, transfer files to your smart device, and provides access to your files stored in your cloud storage.

System requirements

System requirements	PC	Smart device
OS	Windows® 7/Windows® 8	Android 2.3 or later versions iOS5 or later versions
Utilities	ASUS AI Suite 3	ASUS Wi-Fi GO! & NFC Remote

- Install the Wi-Fi GO! card driver and AI Suite 3 utility from your ASUS motherboard's bundled support DVD.

- For your Android smart device, download the ASUS Wi-Fi GO! & NFC Remote from Google Play. For your iOS smart device, download the ASUS Wi-Fi GO! & NFC Remote from App store.

- • Ensure that all Wi-Fi enabled devices using the Wi-Fi GO! utility must be in the same local area network (LAN).

- • The user interface of your smart device may vary with the operating system and the screen resolution.

Smart device supported screen resolutions

Wi-Fi GO! & NFC Remote supports the following screen resolutions of your smart devices:

Screen type	Low Density (120, ldpi)	Medium Density (160, mdpi)	High Density (240, hdpi)	Extra high density (320, xhdpi)
Screen Resolution	1024 x 600	WXGA (1280x800)	1536 x 1152	2048 x 1536
		1024 x 768	1920 x 1152	2560 x 1536
		1280 x 768	1920 x 1200	2560 x 1600

Using Wi-Fi GO!

To use Wi-Fi GO!, click ▼ on the top edge of the screen, then click **Wi-Fi GO!** on the AI Suite 3 main menu bar.

Click to set a password

Use your smart device to scan QR Codes for more information

Wi-Fi GO! menu

- • Launch Wi-Fi GO! & NFC Remote on your smart device to use the Wi-Fi GO! & NFC remote control functions. For more details, refer to section **Wi-Fi GO! & NFC Remote** of this user manual for more details.

- • To protect your Wi-Fi utility from unauthorized remote access, click 🔒 then set a password.

- • Ensure that the ASUS AI Suite 3 utility is active when using the Wi-Fi GO! functions.

Using Wi-Fi GO! & NFC Remote

Wi-Fi GO! & NFC Remote allows you to remotely control your computer using your smart device.

Launching Wi-Fi GO! & NFC Remote

1. On your smart device, turn on the Wi-Fi connection. Ensure that your smart device is within the same network as your computer.

2. Tap ![Wi-Fi GO! & NFC Remote icon] **> Enter**, then tap the computer you want to connect with your smart device.

3. Tap **OK** on the confirmation message.

Using the Wake-on-LAN

If you want to wake up your computer using the smart device, ensure that you enable the computer's Wake-on-LAN settings. To configure your computer's Wake-on-LAN settings:

1. From BIOS Setup, go to **Advanced > APM** then set Power On By PCIE/PCI item to **[Enabled]**.

2. From Windows® OS, do the following:

    a. On your desktop, click **Start**, right-click **Computer > Manage** to launch the Computer Management screen.

    b. Click **Device Manager** to view all the installed devices.

    c. Click **Network Adapters**, right-click the installed module card (Broadcom or Atheros) then click **Properties > Power Management** tab.

    d. Tick these items **Allow this device to wake up the computer** and **Only allow a magic packet to wake the computer**.

For 802.11ac standard Wi-Fi GO! Card, the Wake-on-LAN function will be supported in the later version for Windows® 8 operating system.

Wi-Fi GO functions

- **Cloud GO!:** Allows you to remotely control and sync your files across multiple cloud services such as ASUS WebStorage, GoogleDrive™, and DropBox®.

- **Remote Desktop:** Allows you to remotely control your desktop in real time using your smart device.

- **DLNA Media Hub:** Allows you to stream media files to a DLNA-supported device and remotely control playback using your smart device.

- **File Transfer:** Allows you to transfer files between your computer and your smart device.

- **Smart Sensor Control:** Allows you to remotely control your desktop by using your smart device's built-in sensors.

- **Remote Keyboard & Mouse:** Allows you to use your smart device's touch panel as a remote keyboard and mouse for your computer.

- **Capture & Send:** Allows you to take screenshots and send them to a smart device.

Using Cloud GO!

1.   On your computer, click **Cloud GO!** on the Wi-Fi GO! screen.

2.   Click **Enter** to access your cloud storage accounts.

3.   Log into your Asus WebStorage, Google Drive™ or Dropbox® cloud account then click **Sign In**.

Click to open cloud storage accounts

Click a specific icon to upload, create folder, download, delete or refresh your cloud accounts

Tick to select contents

Click to synchronize your files to other cloud accounts or create a back up to your local drive

Click to go back to Wi-Fi GO! window

Click to go back to the previous screen
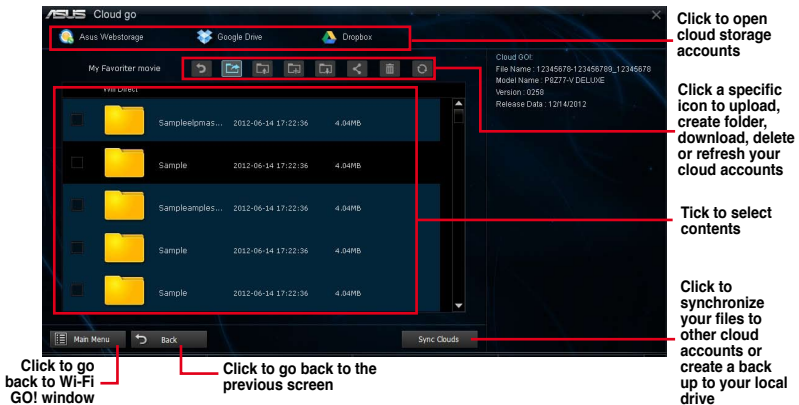
- To access your cloud files from your smart device, ensure that you log into your cloud accounts on your computer.

- Due to the cloud storage limitation, you can only upload or synchronize files with a maximum size of 100 MB.

- Ensure to set the correct system time of your computer for the Cloud GO! to work properly.

- When you synchronize the files, they will automatically synchronize under the Wi-Fi GO! folder of each cloud storage. For the backed up files, you can find them in Favorites folder of your local drive.

Using Remote Desktop

1.   On your smart device, tap **Remote Desktop > Enter**.

2.   Select **Extended Mode** or **Main Screen Mode** to control your computer.

The Extended Mode support varies with the VGA driver installed in your computer.

Using DLNA Media Hub

> To stream media files to a DLNA display, enable the remote control functions in your Windows Media Player. To do this, launch **Windows Media Player**, click **Stream** then tick **Allow remote control of my Player** and **Automatically allow devices to play my media**.

Using DLNA Media Hub on the computer

On your computer, click **DLNA Media Hub** then click **Enter**.

Click to select media file type

Click to edit the playlist

Click to select receiver

Tick to select source location

Media files pane

Displays the target receiver's name and the media file currently playing

Click to go back to Wi-Fi GO! window

Click to go back to previous screen

Using DLNA Media Hub on the smart device

1. On your smart device, tap **DLNA Media Hub**.

2. Select and tap the receiver name.

3. Tap **Enter** to remotely control your computer.

Using File Transfer

Click to set a destination path for file transfers from smart device to computer

Click to go back to Wi-Fi GO! window

Click to go back to the previous screen

Click to transfer files

Transferring files from your computer to your smart device

To transfer files from your computer to your smart device, right-click the file then click **Send to > [Device name]**. After the file transfer is complete, click **OK**.

Ensure to enable File Transfer in your smart device to receive files from your computer.

Transferring files from your smart device to your computer

To transfer files from your smart device to your computer, tap **File Transfer** then tap **Enter**. Tick the file that you want to transfer then click **Send**.

- When transferring files from your computer to your iOS device, you can only receive files in PNG, BMP, JPG, GIF, and TIFF formats.

- To receive files on your iOS devices, go to **Settings > Privacy > Photos** then turn the Wi-Fi GO! & NFC Remote on.

Using Smart Sensor Control

1. On your computer, click **Smart Sensor Control** on the Wi-Fi GO! window.

2. Click **Camera** to take pictures or record videos.

Ensure to enable the Smart Sensor Control on your smart device to enable the smart device's camera.
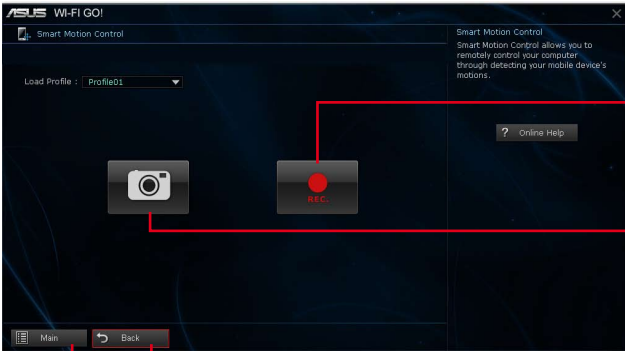
Click to record videos

Click to take pictures

Click to go back to Wi-Fi GO! window

Click to go back to the previous screen

The files are automatically saved in the smart device's local storage.

On smart device

Tap **Smart Sensor Control** on the Wi-Fi GO! & NFC Remote menu.

Click to enable the microphone function

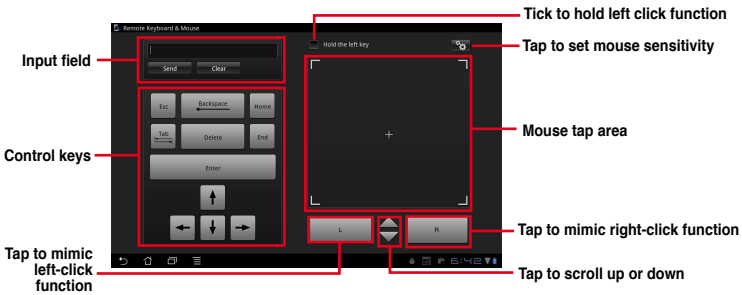**Click to select the sound quality**

Tap to enable the gyroscope function

- The gyroscope and microphone functions are only supported on Windows® 8.

- For the microphone function, the quality of the sound depends on the Wi-Fi environment.

- For voice control commands, refer to http://windows.microsoft.com/en-US/windows-8/using-speech-recognition for more details.

Using Remote Keyboard & Mouse

From your smart device, tap **Remote Keyboard & Mouse** then tap **Enter**.

Tick to hold left click function

Tap to set mouse sensitivity

Input field

Control keys

Mouse tap area

Tap to mimic left-click function

Tap to mimic right-click function

Tap to scroll up or down

Using Capture & Send

On your computer, click **Capture & Send** on the Wi-Fi GO! window.

Assign a hot key for capture range

Tick to select the capture range to the assigned hot key

Click to go back to Wi-Fi GO! window

Click to go back to the previous screen
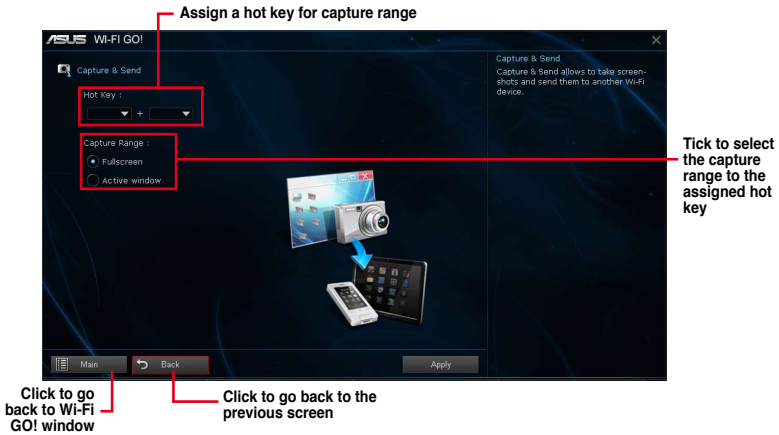
Ensure to enable Capture & Send in your smart device to receive the screen captures from your computer.

RF Equipment Notices

CE: European Community Compliance Statement

The equipment complies with the RF Exposure Requirement 1999/519/EC, Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0–300 GHz). This wireless device complies with the R&TTE Directive.

Wireless Radio Use

This device is restricted to indoor use when operating in the 5.15 to 5.25 GHz frequency band.

Exposure to Radio Frequency Energy

The radiated output power of the Wi-Fi technology is below the FCC radio frequency exposure limits. Nevertheless, it is advised to use the wireless equipment in such a manner that the potential for human contact during normal operation is minimized.

FCC Bluetooth Wireless Compliance

The antenna used with this transmitter must not be colocated or operated in conjunction with any other antenna or transmitter subject to the conditions of the FCC Grant.

Bluetooth Industry Canada Statement

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

NCC: Taiwan Wireless Statement

無線設備的警告聲明
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射頻、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；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法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

於 5.25GHz 至 5.35GHz 區域內操作之
無線設備的警告聲明
工作頻率 5.250 ～ 5.350GHz 該頻段限於室內使用。

Japan RF Equipment Statement

この製品は、周波数帯域5.15～5.35GHzで動作しているときは、屋内においてのみ使用可能です。

KC (RF Equipment)

대한민국 규정 및 준수
방통위고시에 따른 고지사항
해당 무선설비는 운용 중 전파혼신 가능성이 있음,
이 기기는 인명안전과 관련된 서비스에 사용할 수 없습니다.

Modelo:BCM94352HMB

ANATEL
Agência Nacional de Telecomunicações
3020-12-1869

(01)07898940474646

"Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário."

Modelo:AR5B22

ANATEL
Agência Nacional de Telecomunicações
0741-12-6534

(01)07898931331019

"Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário."