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REALTEK 11ax RTL8851BE One Antenna Combo Module User Manual

RTL8851B
11ax RTL8851BE one antenna Combo module
User's Manual
Preliminary Version
2022/12/20

Contents

Temperature

Temperature Limit Ratings
Table 12. Temperature Limit Ratings

Parameter	Minimum	Maximum	Unity
Storage Temperature	-55	+125	°C
Ambient Operating Temperature	-10	70	°C
Junction Temperature	0	125	°C

Humidity Information

MSL level	3

Warning

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 device and its antenna(s) must not be co-located with any other transmitters except in accordance with FCC multi-transmitter product procedures.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

FCC regulations restrict the frequency 5850-5895MHz operation of this device to indoor use 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.

Radiation Exposure Statement:

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

The SAR test is according to KDB 616217 for test requirements."

The maximum output power is reduced by software to perform SAR evaluation as application.

The SAR evaluation is according to KDB 616217, and the module approach distance restriction is 5 mm for notebook, 10 mm for tablet.

'When this module is installed into the host as portable configuration, only PIFA Antenna as described in this use manual is applicable. When other antenna type is used, it is required for a separate reassessment through a class II permissive change application or new certification

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:
2.2 List of applicable FCC rules
This module has been tested for compliance to FCC Part 15

2.3 Summarize the specific operational use conditions
The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

2.4 Limited module procedures
Not applicable.
2.5 Trace antenna designs
Not applicable.

2.6 RF exposure considerations
This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas
The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users.

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 1	REALTEK	RTK-ANT-0022	3.4	2.4-2.4835GHz	PIFA	IPEX4	300
				5	5.15-5.895GHz			
2	Chain 1	Aristotle	RFA-27-C38H1- MHF4300	3	2.4-2.4835GHz	Dipole	IPEX4	300
				5	5.15-5.895GHz			
3	Chain 1	LYN wave	ALX22F-120AA0- 00	3.2	2.4-2.4835GHz	Monopole	IPEX4	200
				4	5.15-5. 895GHz			

2.8 Label and compliance information
The final end product must be labeled in a visible area with the following:
"Contains FCC ID: TX2-RTL8851B". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements
This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-

evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer
This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

As long as all 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.

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.

OEM/Host manufacturer responsibilities
OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment

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.
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.
Radiation Exposure Statement:
The product comply with the Canada portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.
The SAR test is according to KDB 616217 for test requirements."
The maximum output power is reduced by software to perform SAR evaluation as application.
The SAR evaluation is according to KDB 616217, and the module approach distance restriction is 5 mm for notebook, 10 mm for tablet.
'When this module is installed into the host as portable configuration, only PIFA Antenna as described in this use manual is applicable. When other antenna type is used, it is required for a separate reassessment through a class II permissive change application or new certification

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.

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.

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: 6317A-RTL8851B".

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.

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.

This radio transmitter [IC: 6317A-RTL8851B] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 1	REALTEK	RTK-ANT-0022	3.4	2.4-2.4835GHz	PIFA	IPEX4	300
				5	5.15-5.85GHz			
2	Chain 1	Aristotle	RFA-27-C38H1-MHF4300	3	2.4-2.4835GHz	Dipole	IPEX4	300
				5	5.15-5.85GHz			
3	Chain 1	LYN wave	ALX22F-120AA0-00	3.2	2.4-2.4835GHz	Monopole	IPEX4	200
				4	5.15-5.85GHz			

NCC Statement

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 1	REALTEK	RTK-ANT-0022	3.4	2.4-2.4835GHz	PIFA	IPEX4	300
				5	5.15-5.85GHz			
2	Chain 1	Aristotle	RFA-27-C38H1-MHF4300	3	2.4-2.4835GHz	Dipole	IPEX4	300
				5	5.15-5.85GHz			
3	Chain 1	LYN wave	ALX22F-120AA0-00	3.2	2.4-2.4835GHz	Monopole	IPEX4	200
				4	5.15-5.85GHz			

-Installing the Wireless NGFF module Hardware
Installing PCIe NGFF2230 module to PCIe NGFF2230 connector and connect two external Wi-Fi antennas on I-PEX connectors.

Un-installing the Wireless NGFF module Hardware
Remove 2 external Wi-Fi Antennas from the Wireless PCIe NGFF2230 module board and remove the Wireless PCIe NGFF2230 module board from PCIe NGFF2230 connector port

Installing the WLAN & Bluetooth USB NGFF module Software

Before you proceed with the installation, please notice following descriptions.

Note1: The following installation was operated under Windows 7.

Note2: If you have installed the WLAN driver & utility before, please uninstall the old version first.

A. Execute the "setup.exe", Click "Next" to process the installation
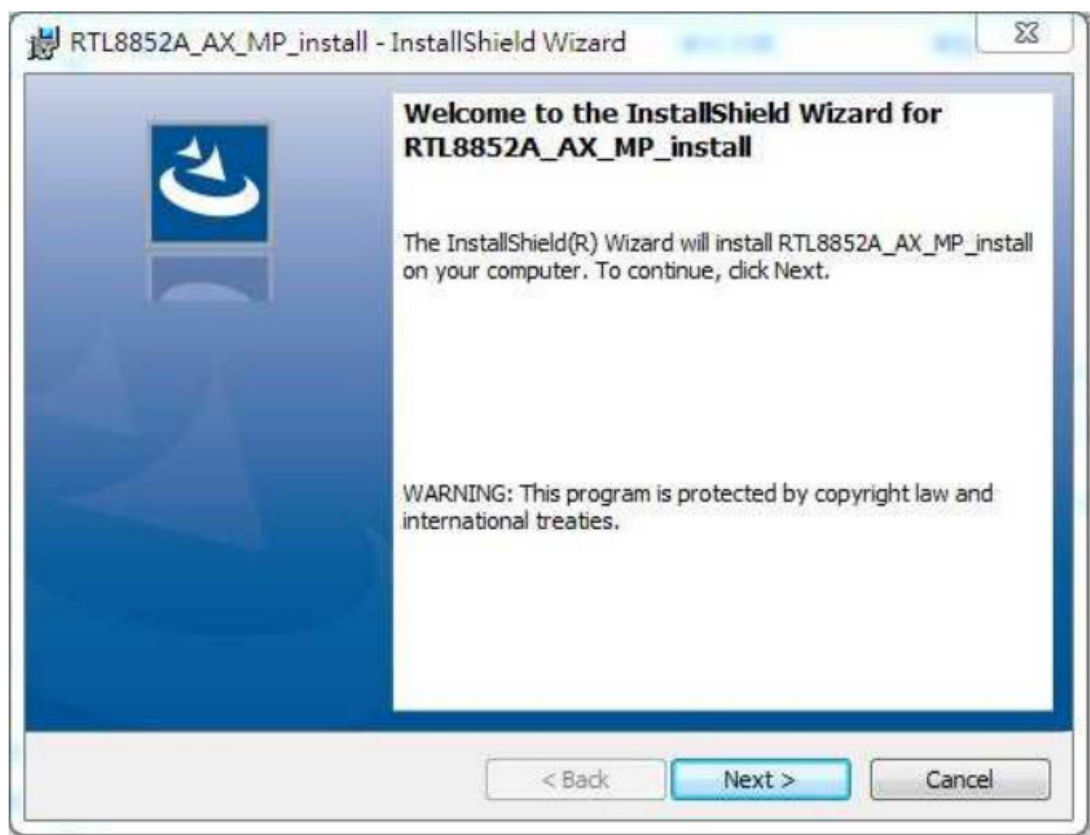
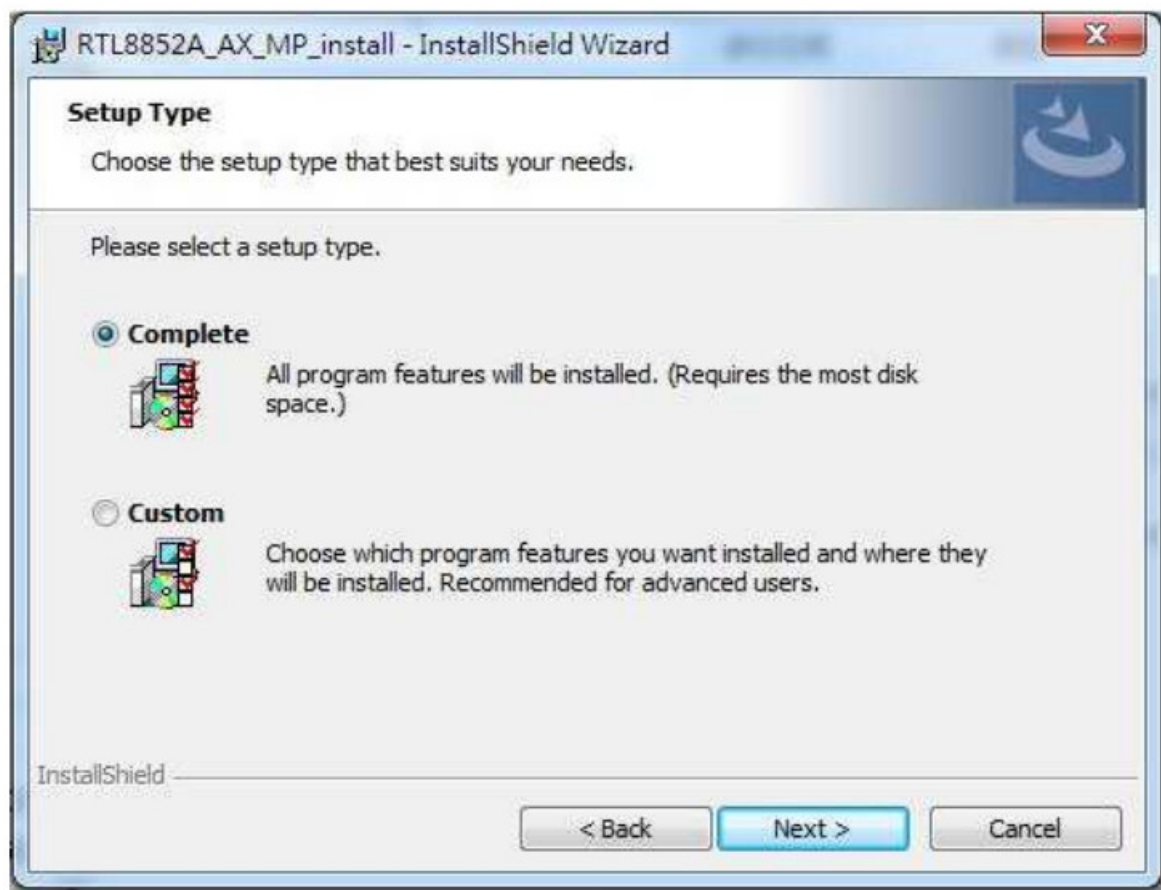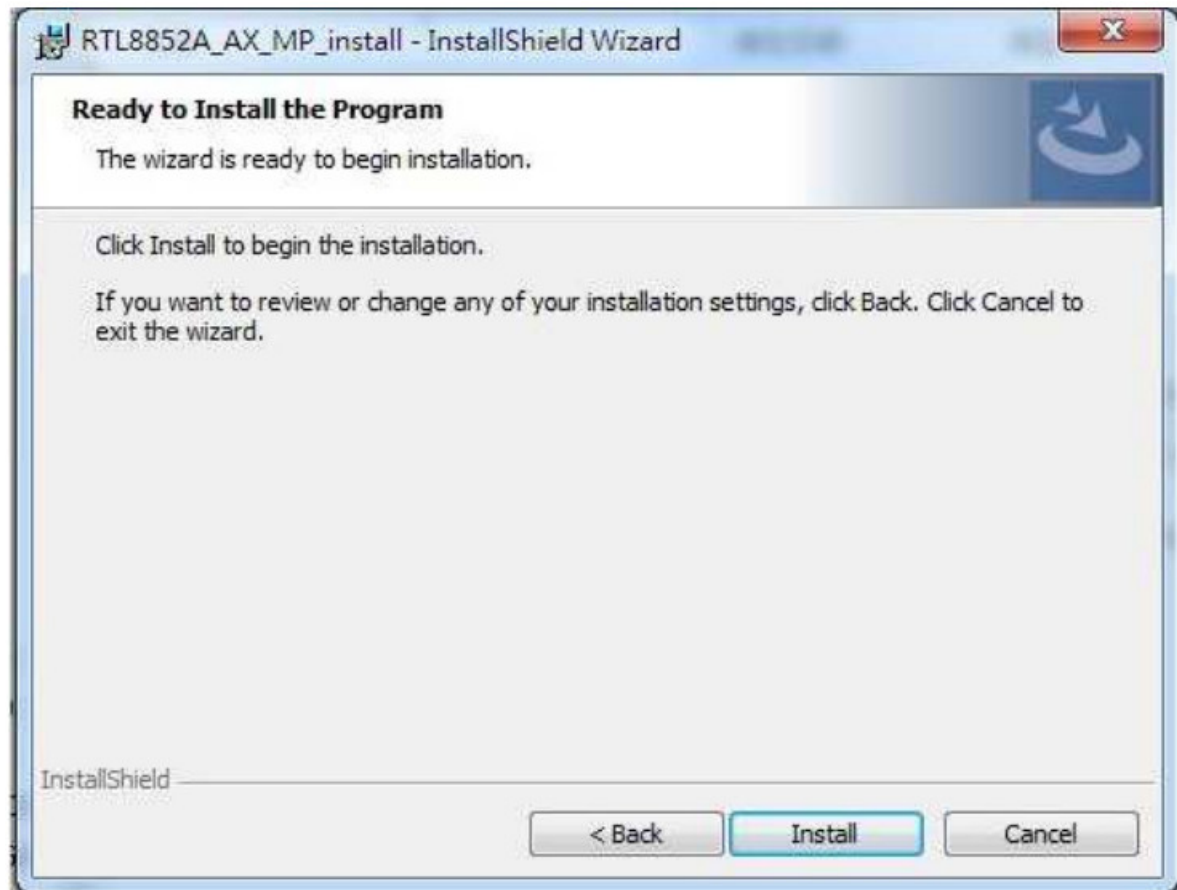B. Select "I accept the terms in license agreement" and click "Next" to process the installation
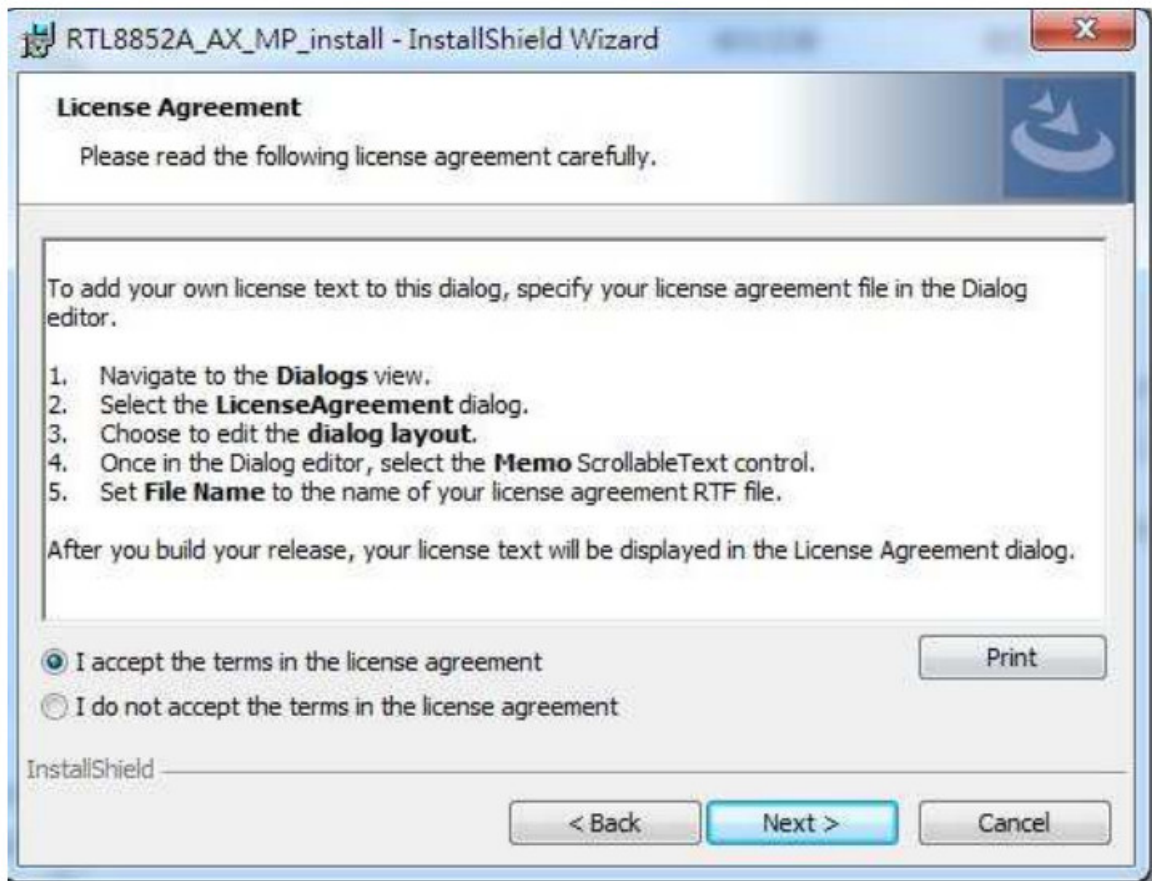
C. Click "Next" button.
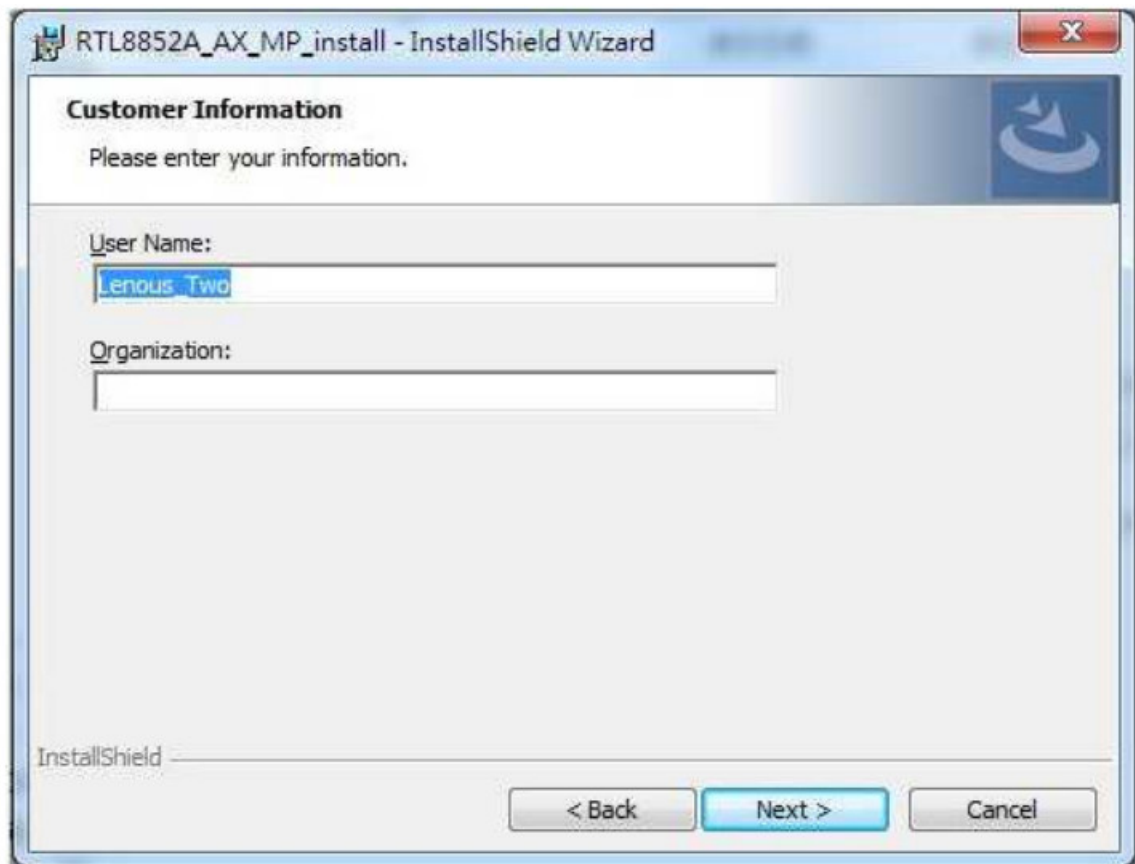
D. Select "Complete" and click "Next" button.

E. Click "Install" button.

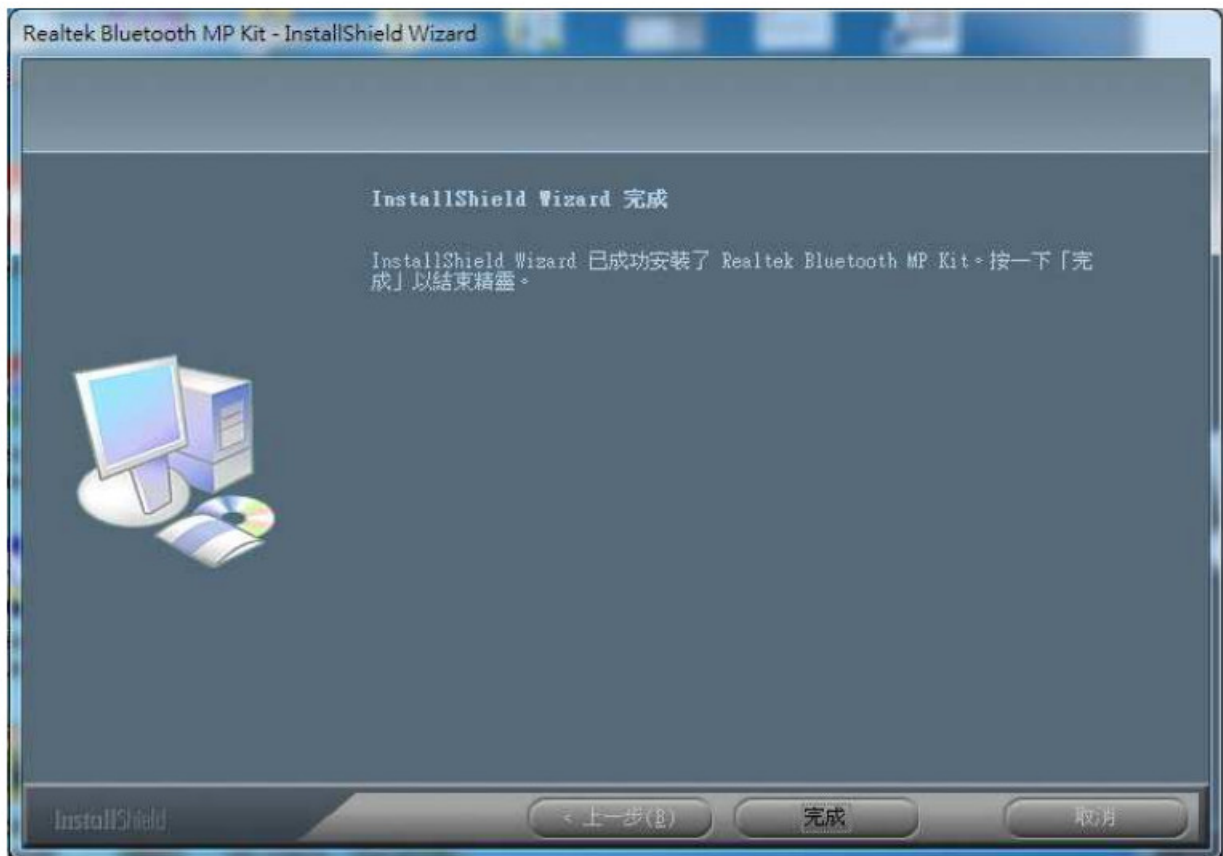F. Click "Finish" button.

G. Please click to continue.
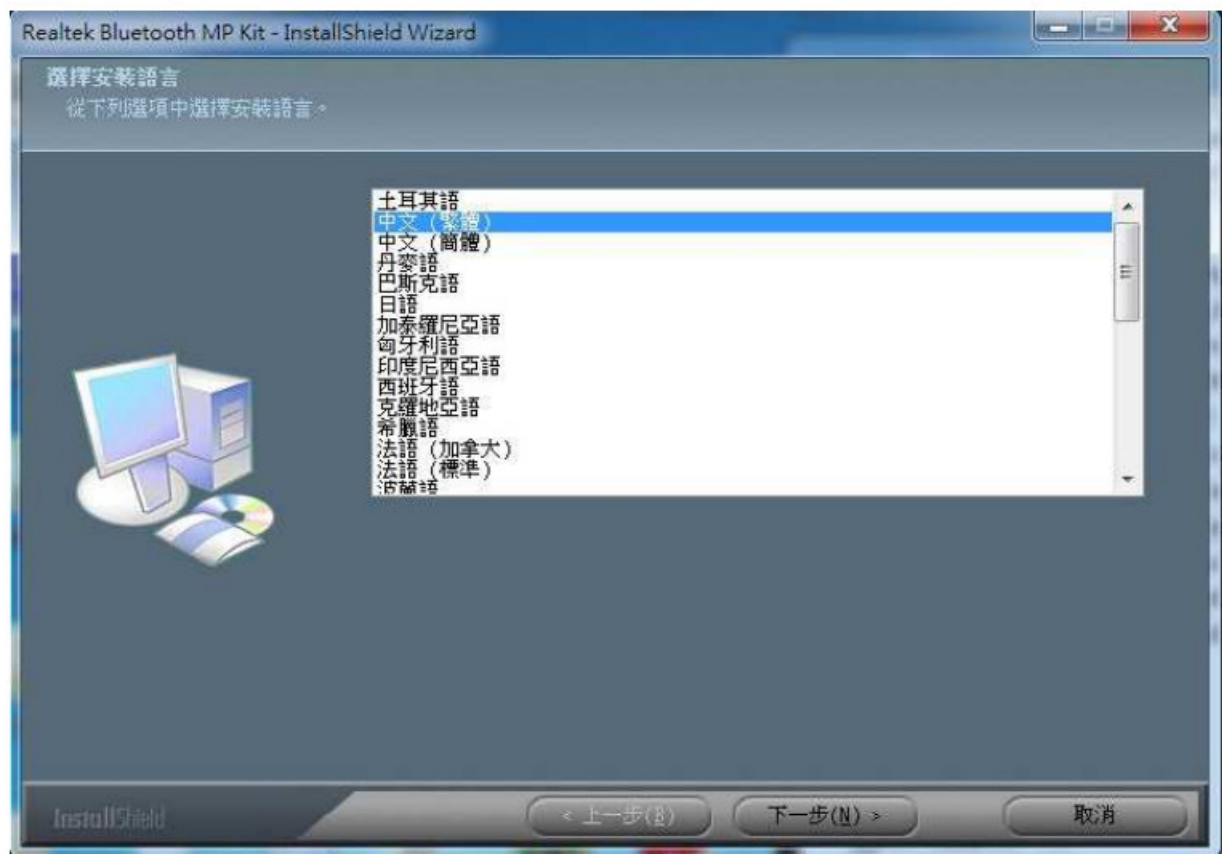
H. Please click to continue.
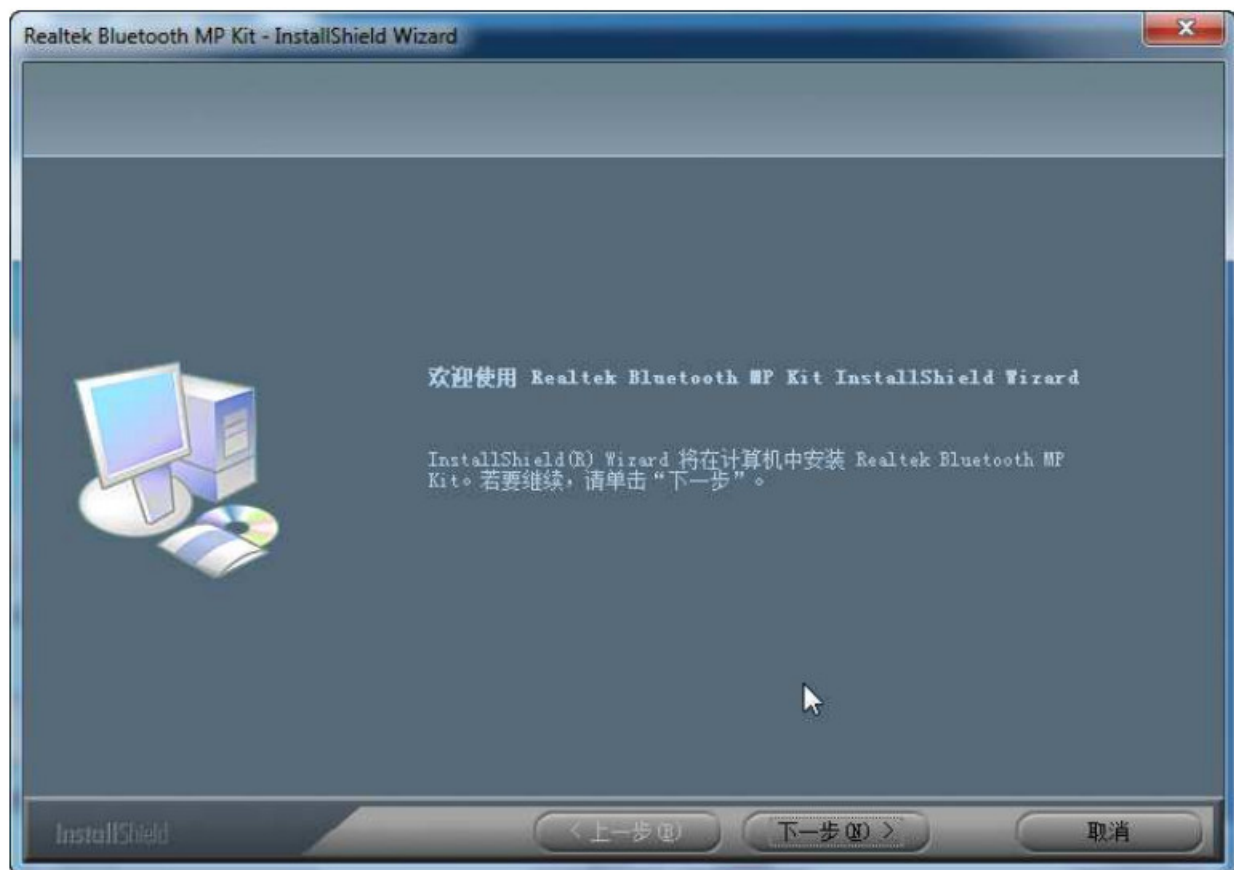
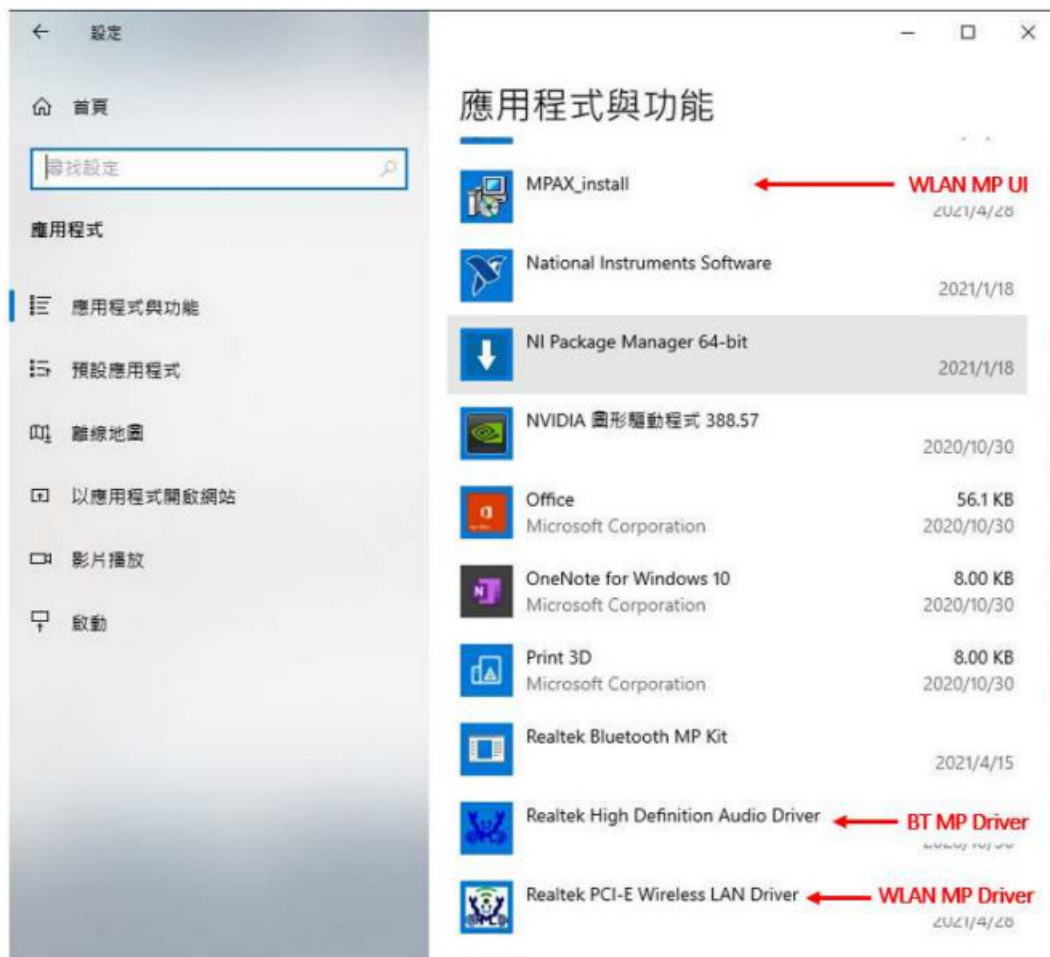I. Please click to start installation.

J. Please click to finish the installation.

Un-installing the Wireless NGFF module Software
A. Uninstall the RTL8852BE WLAN Driver from "Start'→ "Control Panel"→ "Programs"
Please select items as below and click "Uninstall" to remove RTL8852BE WLAN, BT driver and MP UI.

Documents / Resources

REALTEK REALTEK 11ax RTL8851BE One Antenna Combo Module [pdf] User Manual
REALTEK 11ax RTL8851BE One Antenna Combo Module, REALTEK, 11ax RTL8851BE One Antenna Combo Module, One Antenna Combo Module, Antenna Combo Module, Combo Module

References

- **User Manual**