AIW-173 Series
User Manual

Revision History

Version	Date	Description
1.00	*2025/3/11*	*Initial Release*

Regulatory Model: AIW-173LQ-GI1, AIW-173LQ-GI2, AIW-173BQ-GI1, AIW-173BQ-GI2, AIW-173HQ-GI1 and AIW-173HQ-GI2

FCC ID: M82-AIW-173
IC:9404A-AIW173

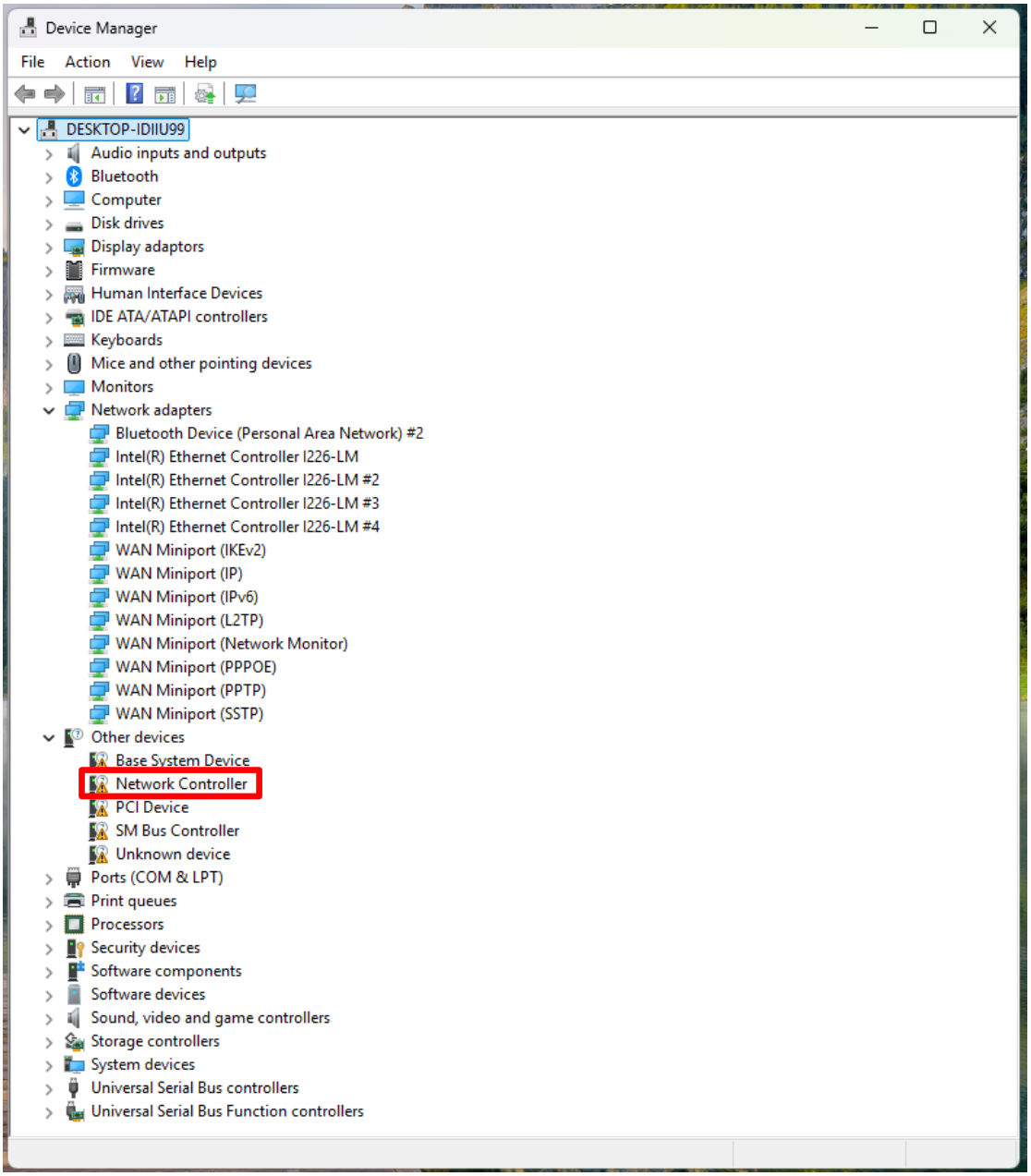
The AIW-173 Series includes six variant SKUs, and all models are electrically identical.
The differences among these models are as follows:

Model	AIW-173LQ-GI1	AIW-173LQ-GI2	AIW-173BQ-GI1	AIW-173BQ-GI2	AIW-173HQ-GI1	AIW-173HQ-GI2
Form Factor	LGA Type		M.2 E-Key		mini PCIe	
Interface	WiFi: PCIe BT: USB	WiFi: PCIe BT: UART	WiFi: PCIe BT: USB	WiFi: PCIe BT: UART	WiFi: PCIe BT: USB	WiFi: PCIe BT: UART

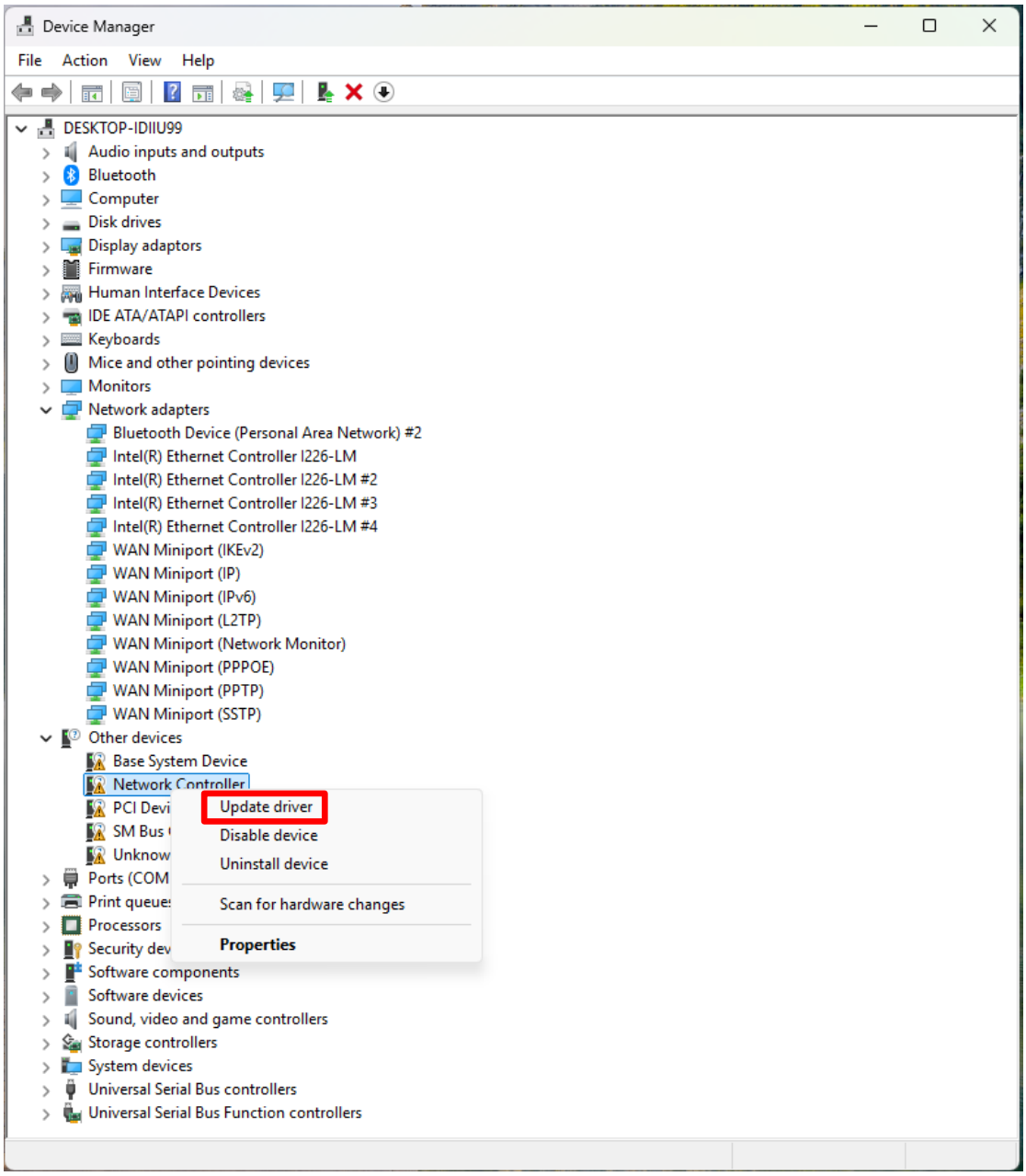
Recommended OS Version:

Windows 11

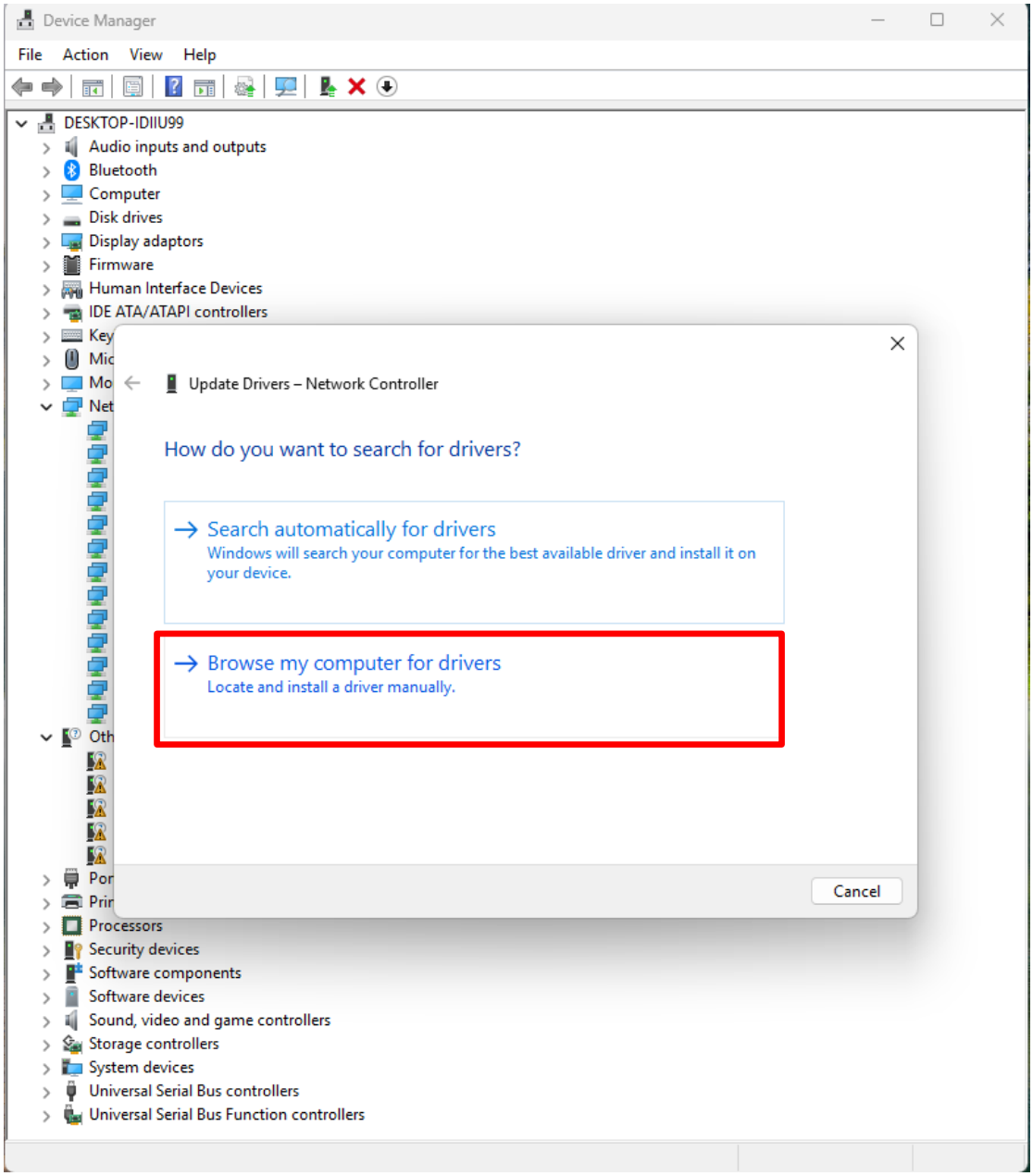
1. Open Device Manager through MS Management Console and start to install Wi-Fi driver. Make sure the network device is showed in the list



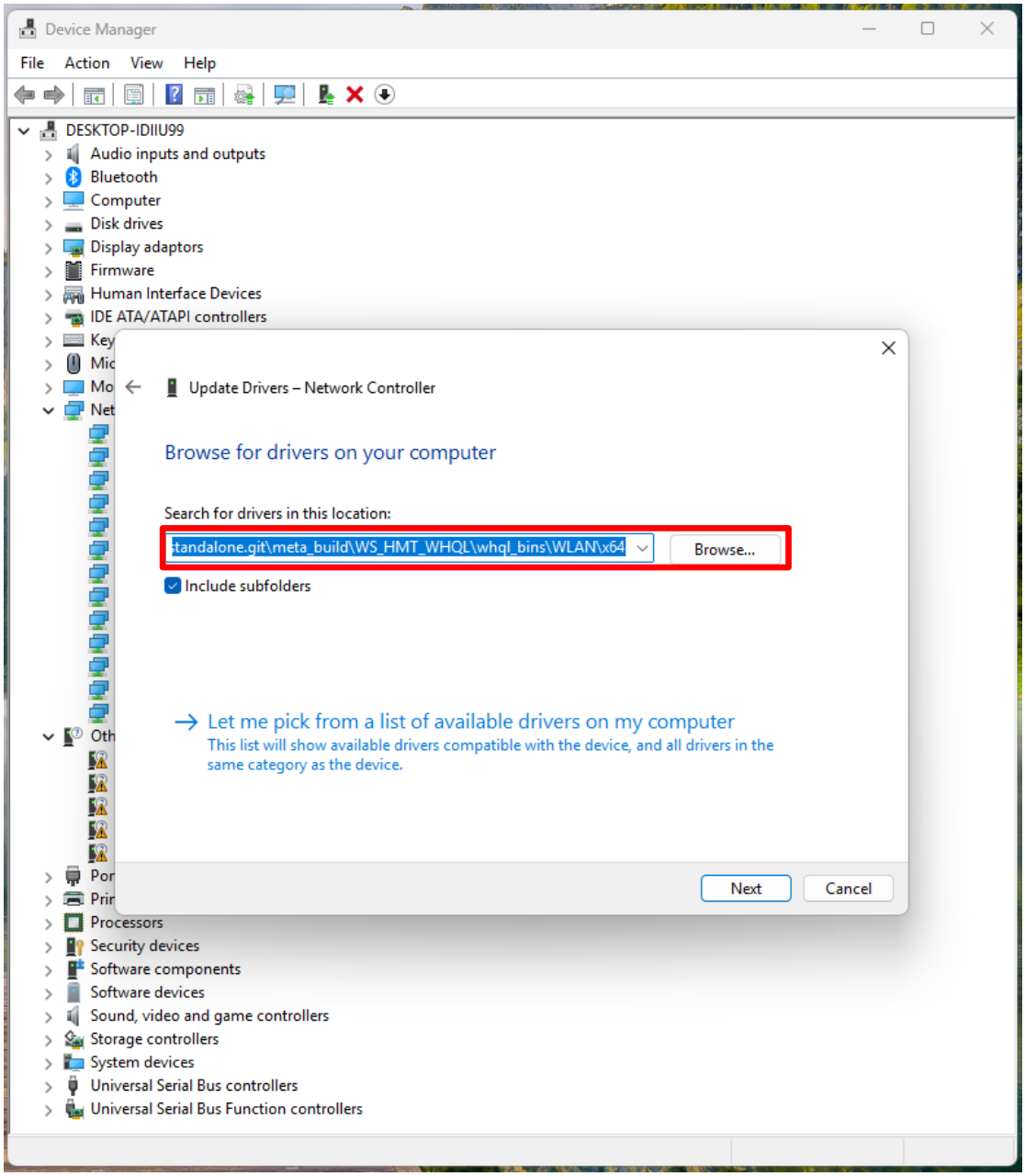
2. Make right-click and select “update driver” for driver installation

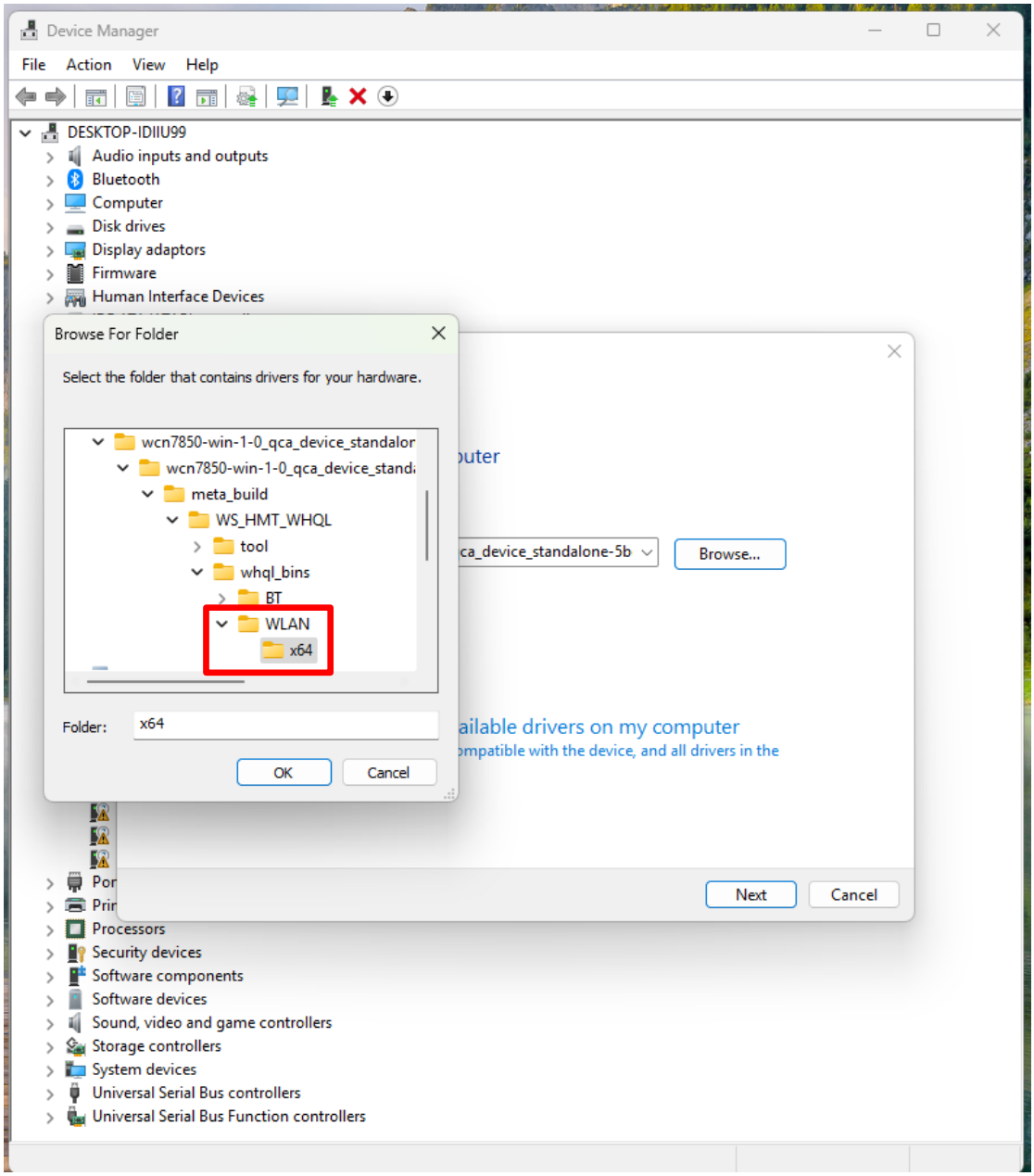


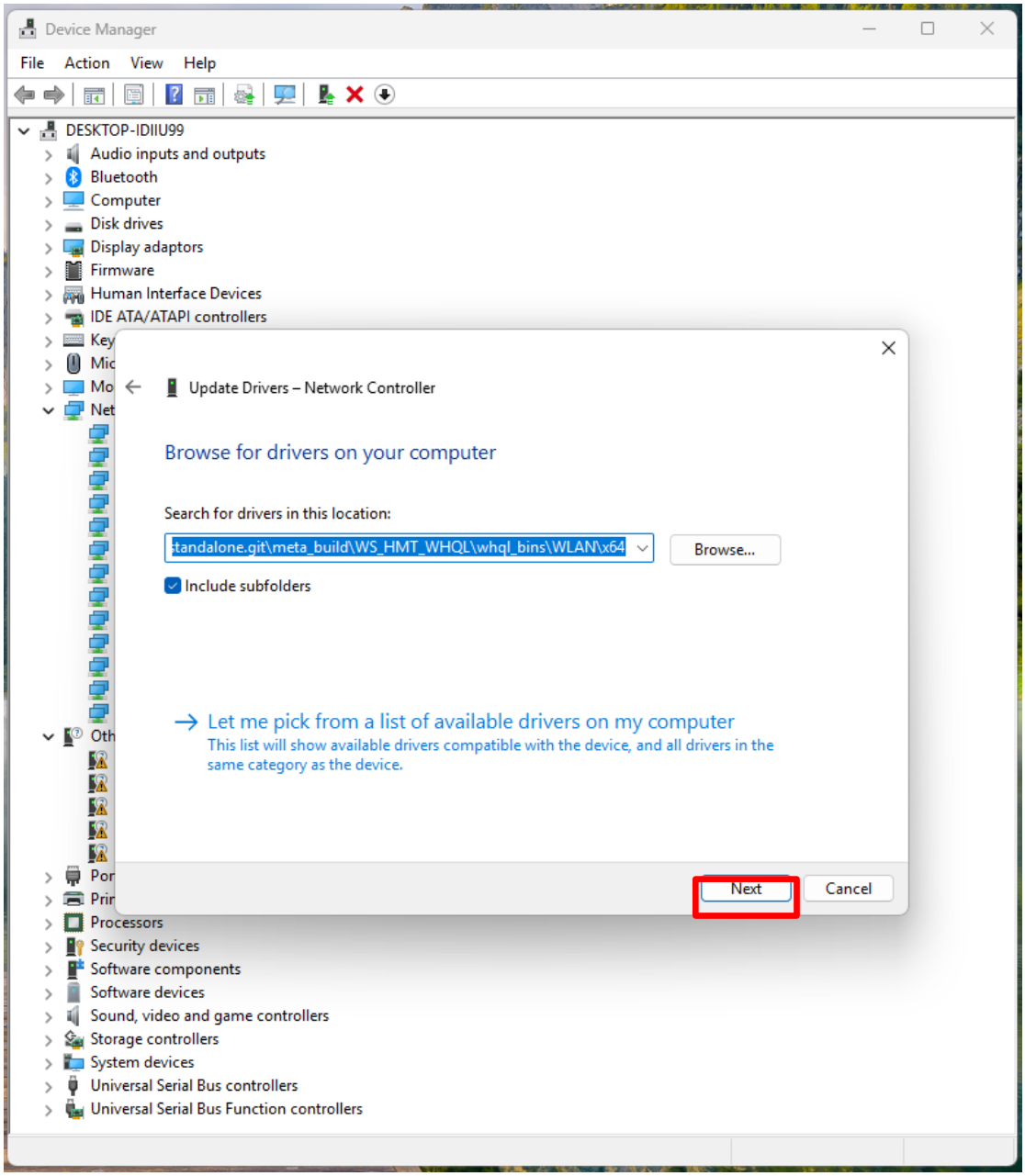
3. Browse Qualcomm driver for Wi-Fi in the PC.



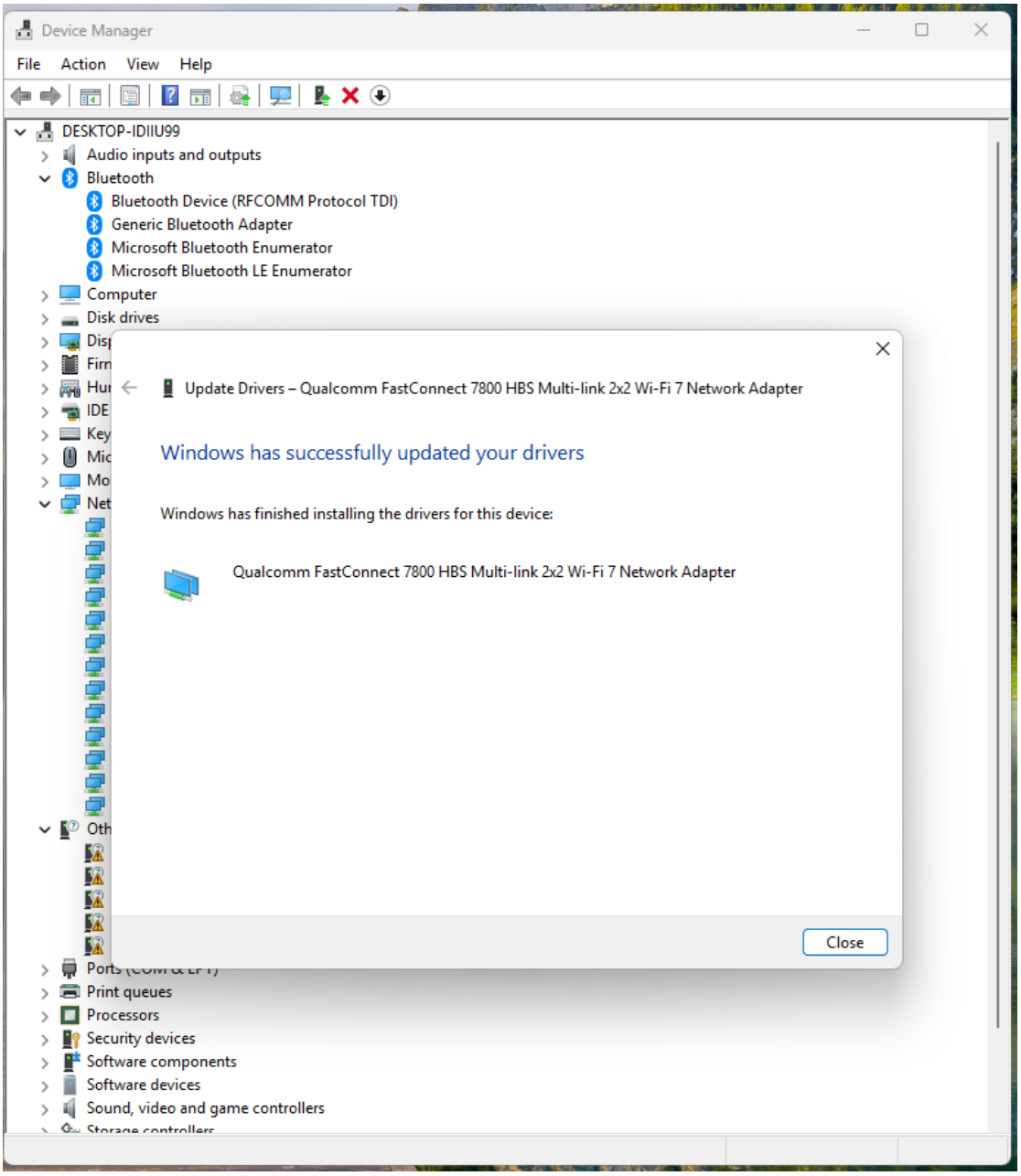
4. Navigate the INF driver location, select the file and click “next step”

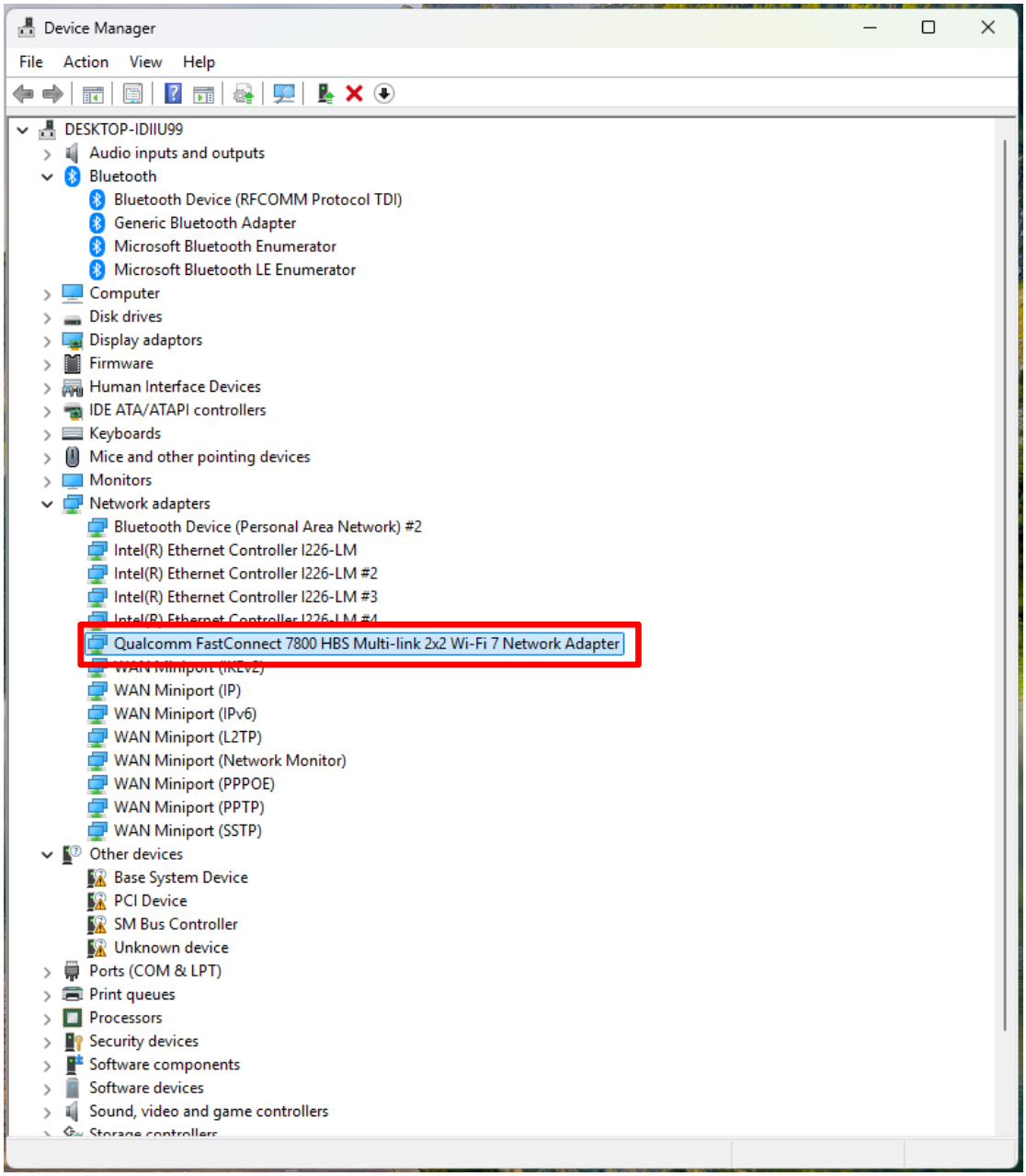



Device Manager
File Action View Help
DESKTOP-IDIIU99
Audio inputs and outputs
Bluetooth
Computer
Disk drives
Display adaptors
Firmware
Human Interface Devices
Browse For Folder
Select the folder that contains drivers for your hardware.
wcn7850-win-1-0_qca_device_standalor
wcn7850-win-1-0_qca_device_standa
meta_build
WS_HMT_WHQL
tool
whql_bins
BT
WLAN
x64
Folder:
x64
OK
Cancel
ca_device_standalone-5b
Browse...
ailable drivers on my computer
Next
Cancel
Processors
Security devices
Software components
Software devices
Sound, video and game controllers
Storage controllers
System devices
Universal Serial Bus controllers
Universal Serial Bus Function controllers

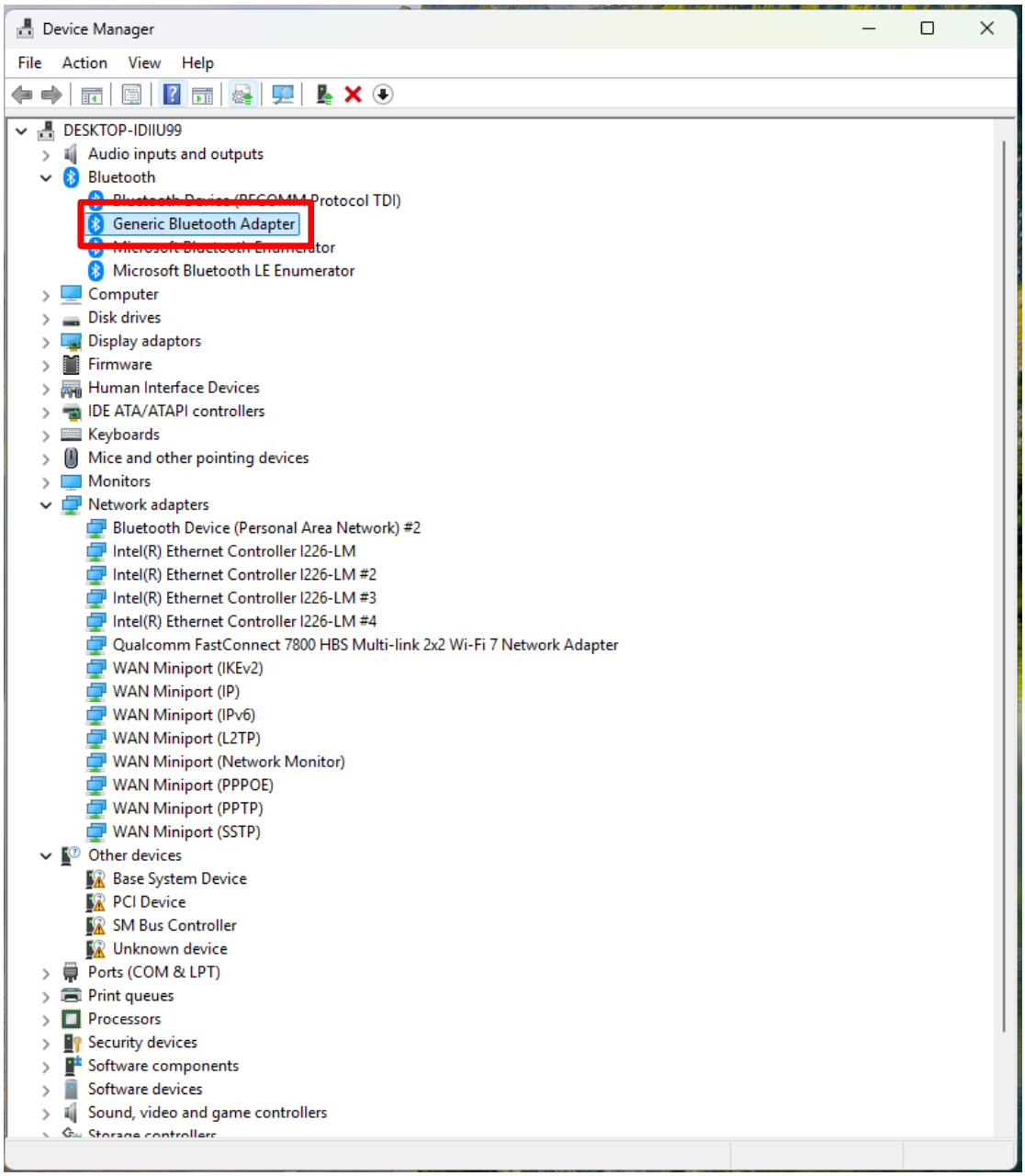

Device Manager
File Action View Help
DESKTOP-IDIIU99
Audio inputs and outputs
Bluetooth
Computer
Disk drives
Display adaptors
Firmware
Human Interface Devices
IDE ATA/ATAPI controllers
Update Drivers – Network Controller
Browse for drivers on your computer
Search for drivers in this location:
standalone.git\meta_build\WS_HMT_WHQL\whql_bins\WLAN\x64
Browse...
Include subfolders
Let me pick from a list of available drivers on my computer
This list will show available drivers compatible with the device, and all drivers in the same category as the device.
Next
Cancel
Processors
Security devices
Software components
Software devices
Sound, video and game controllers
Storage controllers
System devices
Universal Serial Bus controllers
Universal Serial Bus Function controllers

5. **Driver installed successfully and check if “Qualcomm FastConnect 7800 HBS Multi-link 2x2 Wi-Fi 7 Network Adapter” shows up correctly in the list**

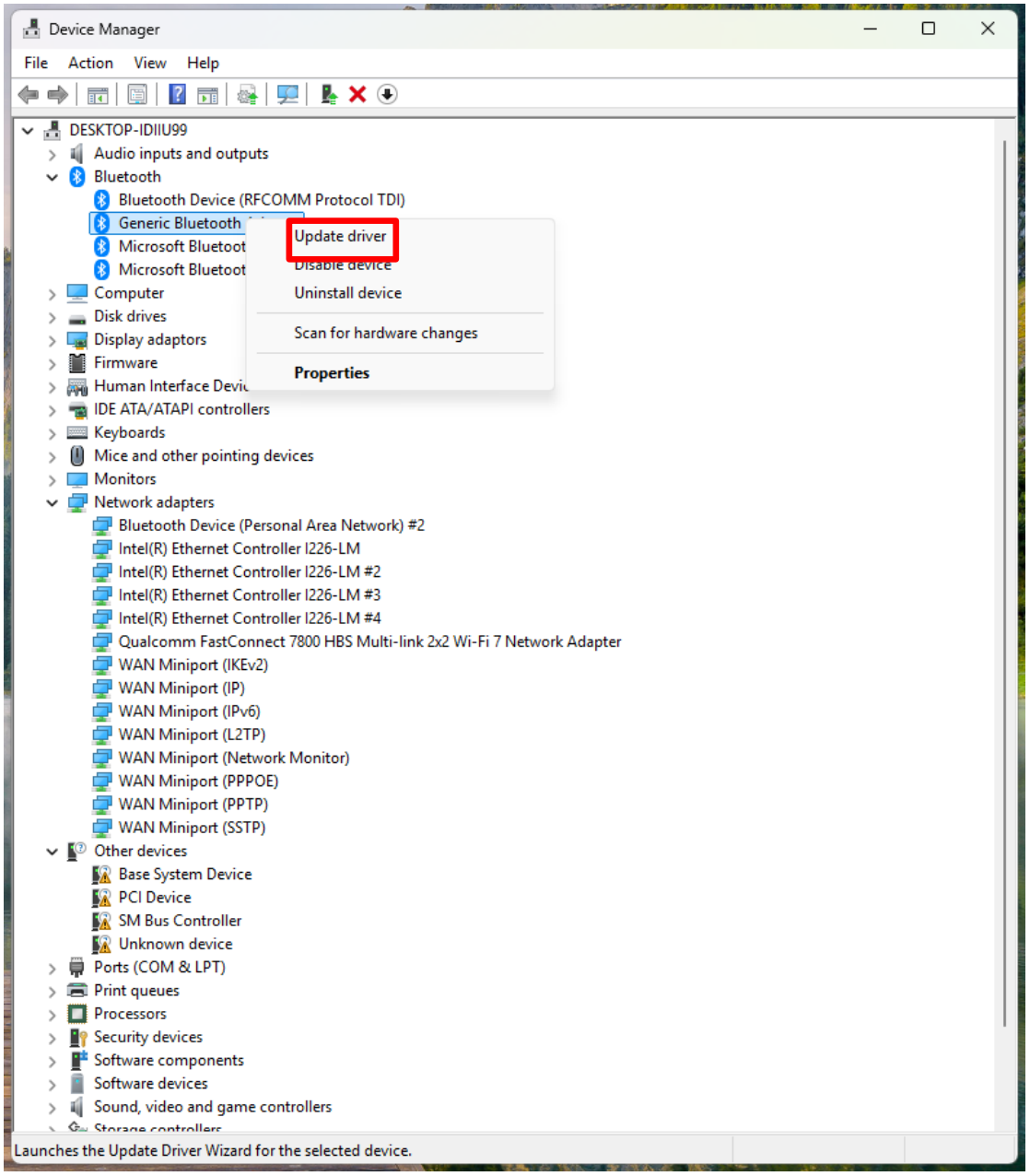



Device Manager
File
Action
View
Help
DESKTOP-IDIIU99
Audio inputs and outputs
Bluetooth
Bluetooth Device (RFCOMM Protocol TDI)
Generic Bluetooth Adapter
Microsoft Bluetooth Enumerator
Microsoft Bluetooth LE Enumerator
Computer
Disk drives
Display adaptors
Firmware
Human Interface Devices
IDE ATA/ATAPI controllers
Keyboards
Mice and other pointing devices
Monitors
Network adapters
Bluetooth Device (Personal Area Network) #2
Intel(R) Ethernet Controller I226-LM
Intel(R) Ethernet Controller I226-LM #2
Intel(R) Ethernet Controller I226-LM #3
Qualcomm FastConnect 7800 HBS Multi-link 2x2 Wi-Fi 7 Network Adapter
WAN Miniport (IP)
WAN Miniport (IPv6)
WAN Miniport (L2TP)
WAN Miniport (Network Monitor)
WAN Miniport (PPPOE)
WAN Miniport (PPTP)
WAN Miniport (SSTP)
Other devices
Base System Device
PCI Device
SM Bus Controller
Unknown device
Ports (COM & LPT)
Print queues
Processors
Security devices
Software components
Software devices
Sound, video and game controllers

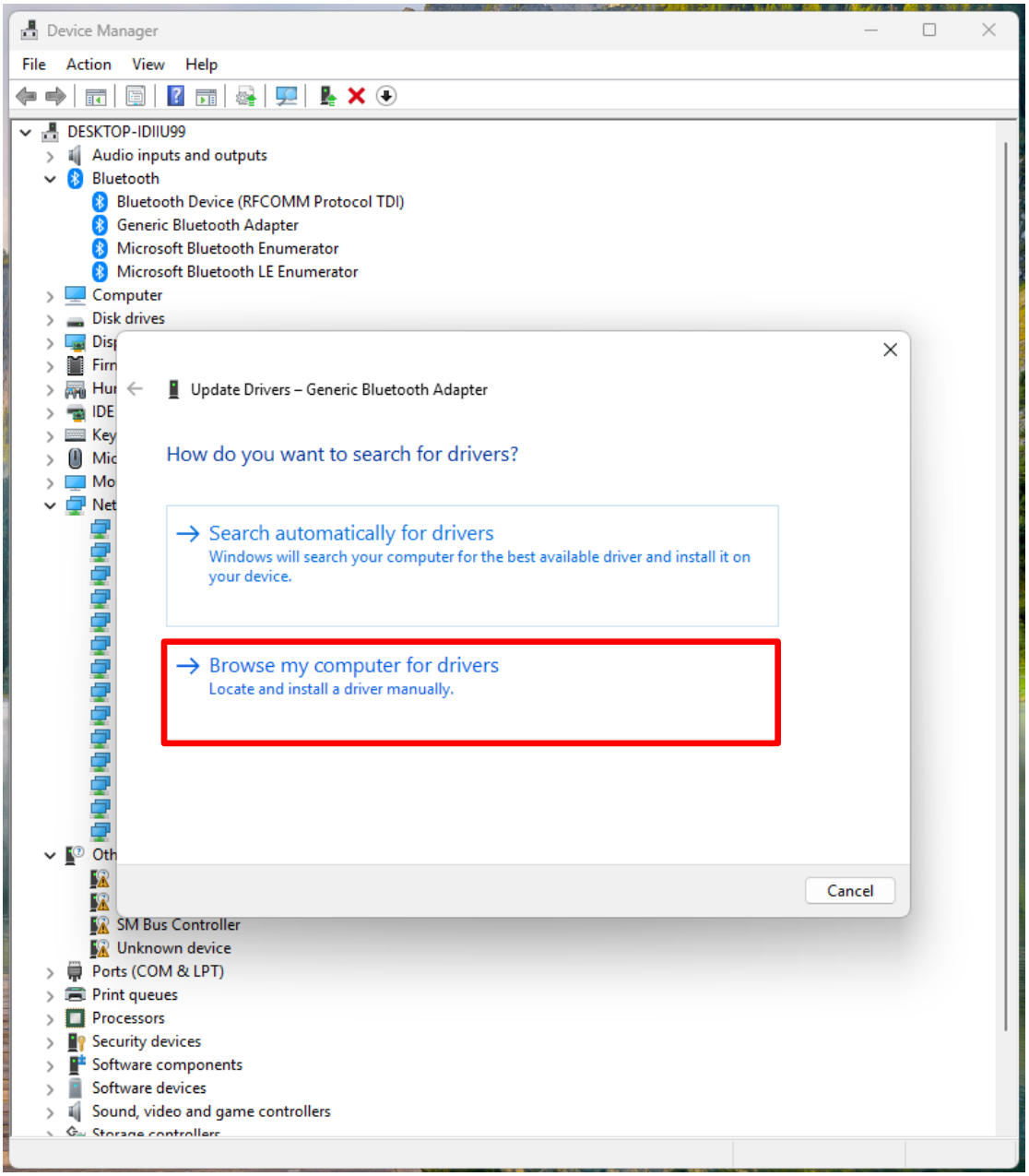
6. Start to install BT driver and make sure the Generic Bluetooth Adapter is showed in the list



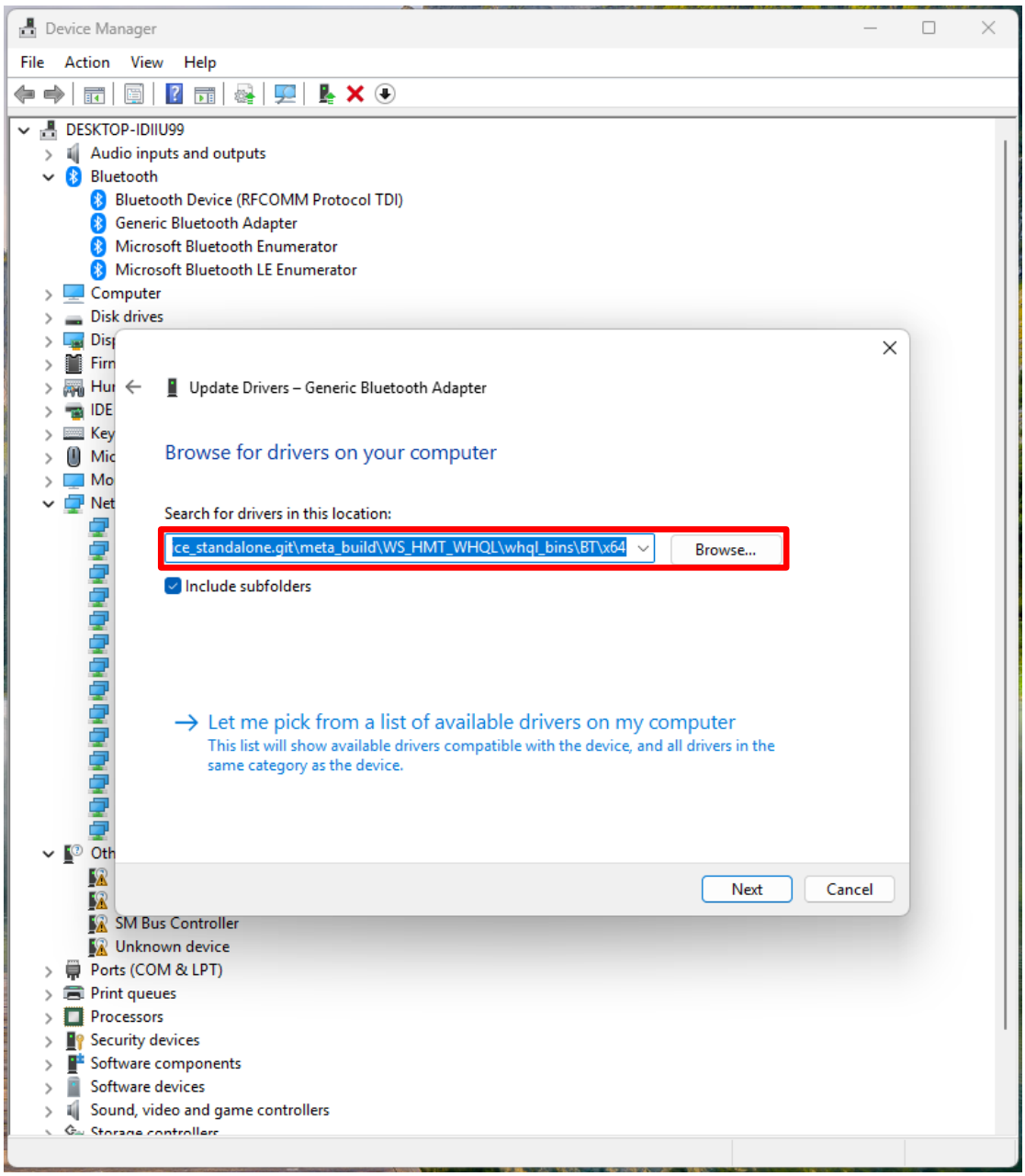
7. Make right-click and select “update driver” for driver installation

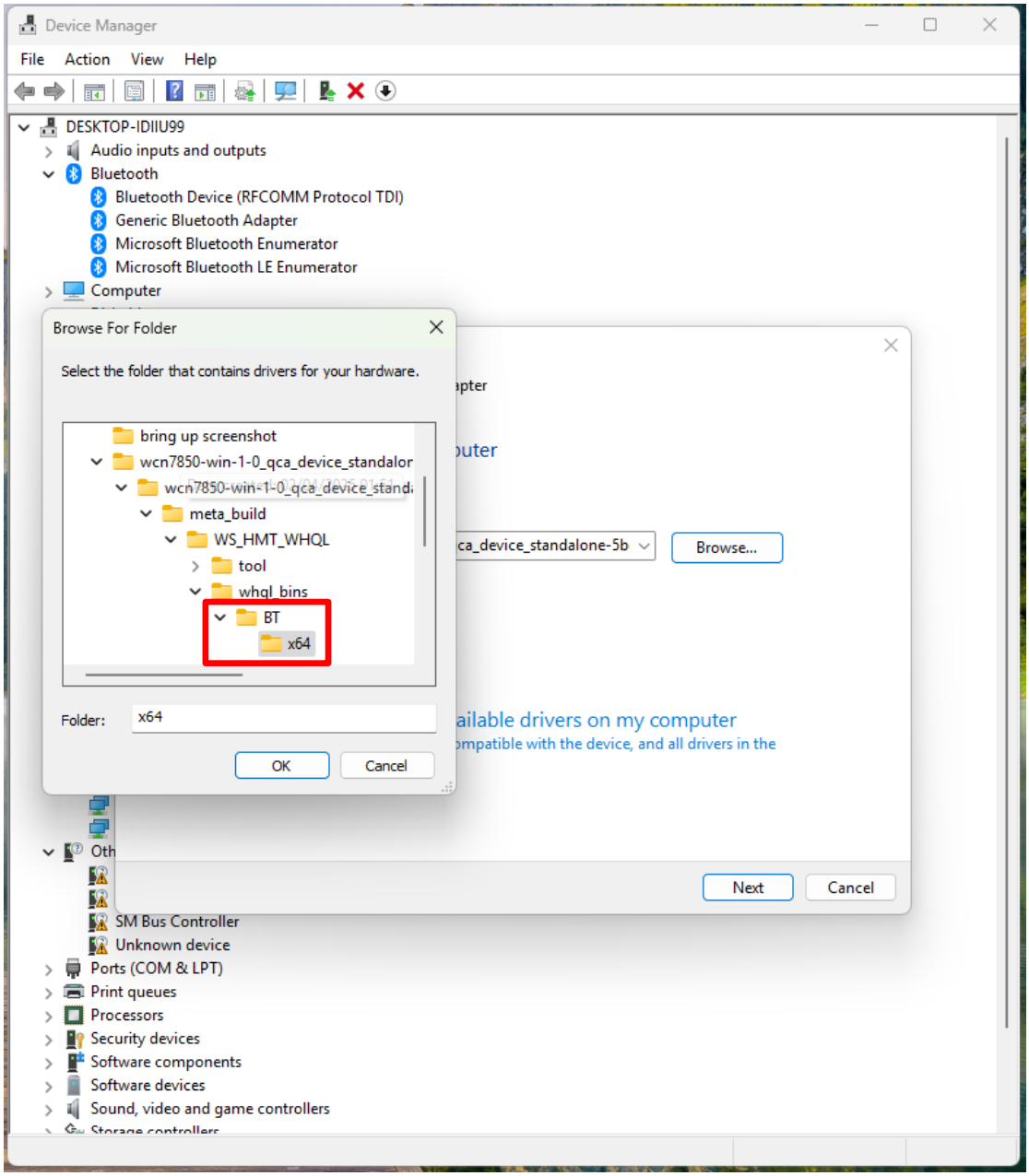


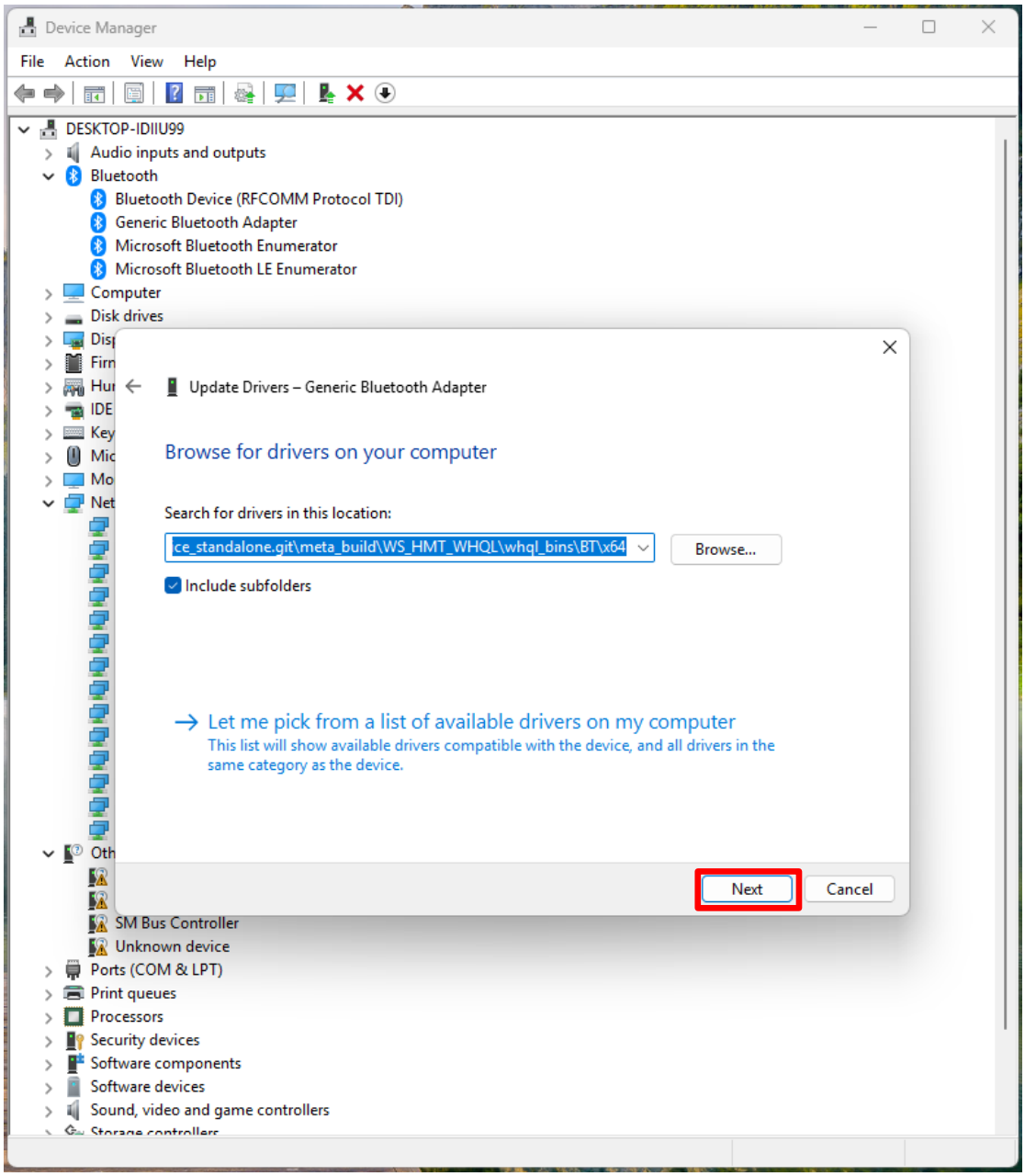
8. Browse Qualcomm driver for BT in the PC.



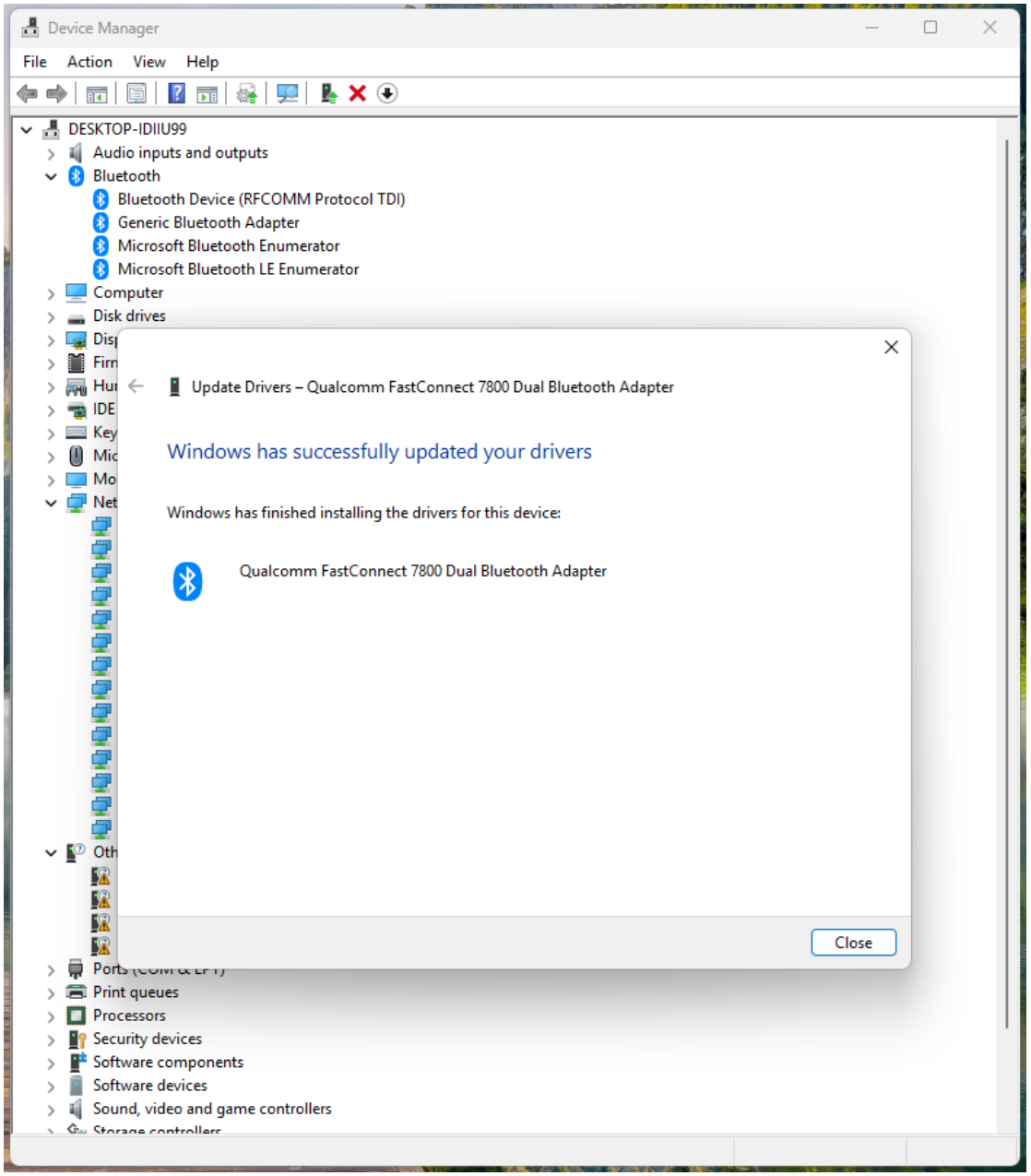
9. Navigate the INF driver location, select the file and click “next step”.

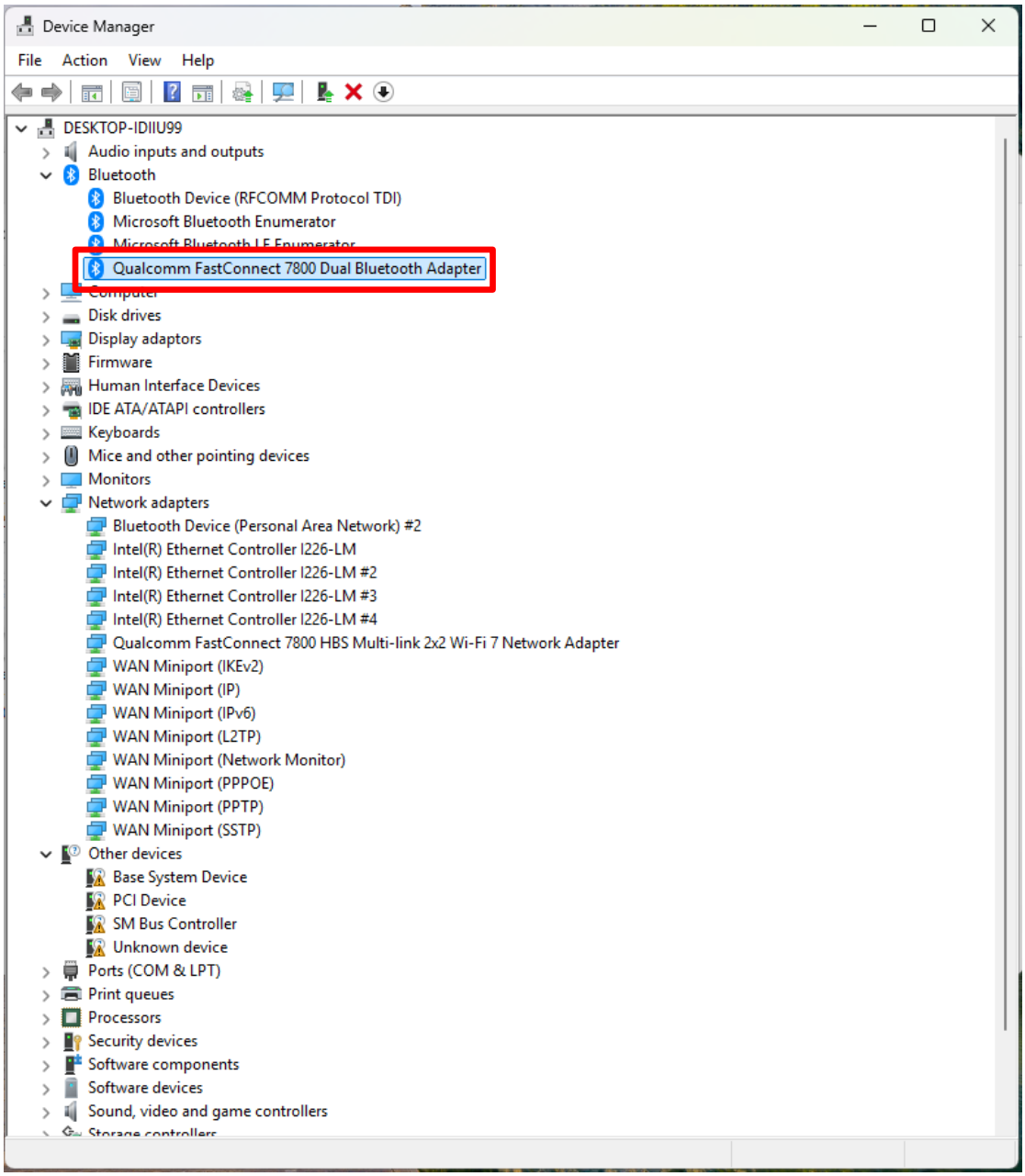



Device Manager
File Action View Help
DESKTOP-IDIIU99
Audio inputs and outputs
Bluetooth
Bluetooth Device (RFCOMM Protocol TDI)
Generic Bluetooth Adapter
Microsoft Bluetooth Enumerator
Microsoft Bluetooth LE Enumerator
Computer
Browse For Folder
Select the folder that contains drivers for your hardware.
bring up screenshot
wcn7850-win-1-0_qca_device_standalor
wcn7850-win-1-0_qca_device_standa
meta_build
WS_HMT_WHQL
tool
whql_bins
BT
x64
Folder: x64
OK
Cancel
Browse...
Next
Cancel
SM Bus Controller
Unknown device
Ports (COM & LPT)
Print queues
Processors
Security devices
Software components
Software devices
Sound, video and game controllers


Device Manager
File Action View Help
DESKTOP-IDIIU99
Audio inputs and outputs
Bluetooth
Bluetooth Device (RFCOMM Protocol TDI)
Generic Bluetooth Adapter
Microsoft Bluetooth Enumerator
Microsoft Bluetooth LE Enumerator
Computer
Disk drives
Update Drivers – Generic Bluetooth Adapter
Browse for drivers on your computer
Search for drivers in this location:
ce_standalone.git\meta_build\WS_HMT_WHQL\whql_bins\BT\x64
Browse...
Include subfolders
Let me pick from a list of available drivers on my computer
This list will show available drivers compatible with the device, and all drivers in the same category as the device.
Next
Cancel
SM Bus Controller
Unknown device
Ports (COM & LPT)
Print queues
Processors
Security devices
Software components
Software devices
Sound, video and game controllers

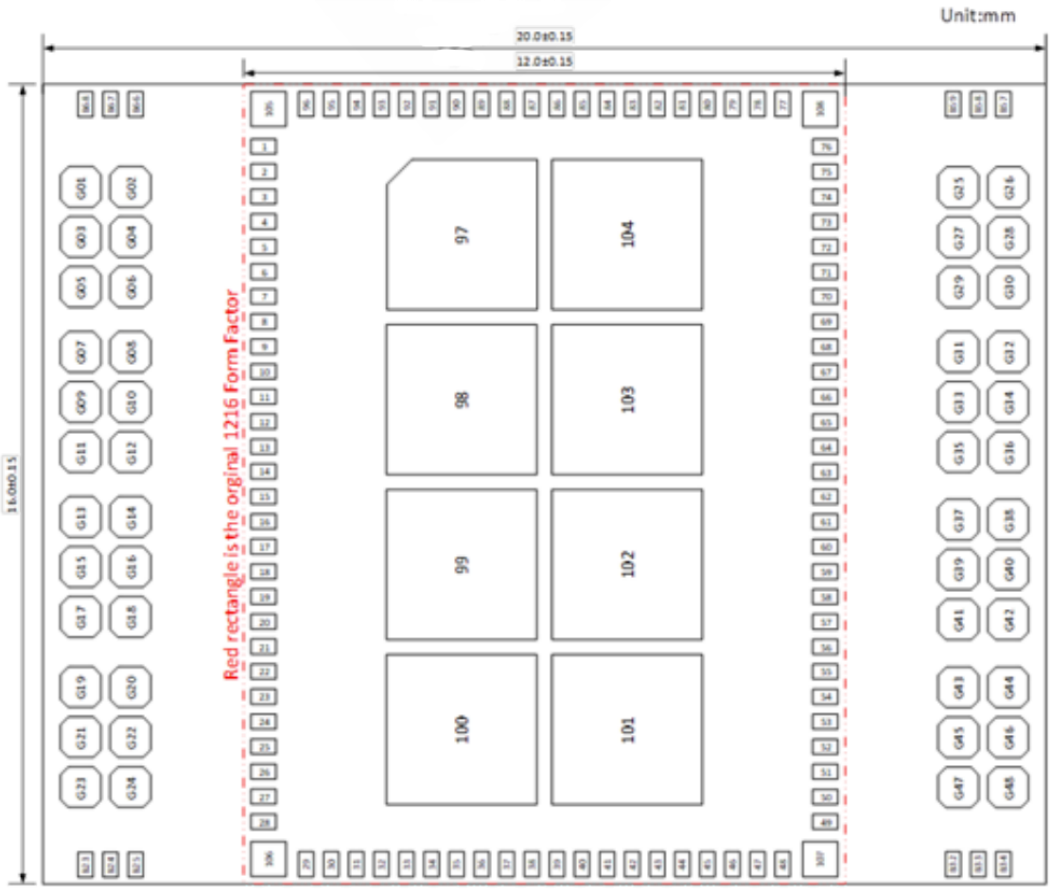
10.Driver installed successfully and check if “Qualcomm FastConnect 7800 Dual Bluetooth Adapter” shows up correctly in the list





11. Start to connect Wi-Fi /BT function via MS UI.

Pin Define



TOP View

Module	description	Voltage	I/O		Function description
Pin1	NC				
Pin2	NC				
Pin3	NC				
Pin4	3V3				
Pin5	3V3				
Pin6	GND				
Pin7	WL_TX_EN	1.8 V	PD	O	This is an output from the WCN7851 to the SDR. The WCN7851 asserts this GPIO to high state, when either 5 GHz chain 0 or chain 1 is set to transmit at power greater than 10 dBm. When this GPIO is set high, the LAA receiver is placed in a protected state. No function by default.

Pin8	LAA_TX_EN		PD	I	This is an input from the SDR to the WCN7851. The SDR sets GPIO high if LAA is transmitting. GPIO is monitored by WCN7851. When it goes high, WCN7851 places the 5 GHz receiver in a protected state. SRD sets high when LAA transmits at 10 dBm or higher. This pin is monitored even in sleep mode, as long as the 0.8 V AON domain is powered. No function by default.
Pin9	NC				
Pin10	NC				
Pin11	LTE_COEX_RXD	1.8 V	NP	I	WSI interface for LTE co-existing interface with LTE modem to enable firmware communication.
Pin12	LTE_COEX_TXD		PD	O	
Pin13	WLAN_DEVICE_SOL				
Pin14	NC				
Pin15	NC				
Pin16	WLAN_HOST_SOL				
Pin17	GND				
Pin18	NC				
Pin19	NC				
Pin20	GND				
Pin21	HMT_PCIE_TXN1			O	WLAN PCIe transmit output differential signals
Pin22	HMT_PCIE_TXP1			O	
Pin23	GND				
Pin24	HMT_PCIE_RXN1			I	WLAN PCIe receive input differential signals
Pin25	HMT_PCIE_RXP1			I	
Pin26	GND				
Pin27	NC				
Pin28	W_DISABLE1_L	1.8 V	PU	I	It is an interrupt pin to WLAN CPU. When WLAN detects interrupt, it turns off WLAN MAC/PHY/RF for power save application. The I/O only supported 1.8 V and the device had an internal 100 KΩ pull-up 1.8 V.
Pin29	HMT_PCIE_WAKE	1.8 V	PU OD	O	WLAN PCIe wake-up signal is an output signal. It is an open-drain signal that requires an external 10 KΩ pull-up resistor.
Pin30	HMT_PCIE_CLKREQ		PU OD	B	WLAN PCIe clock request signal is a bidirection signal. It is an open-drain signal that requires an external 10 KΩ pull-up resistor.
Pin31	HMT_PCIE_RST		PD	I	WLAN PCIe reset signal is an input signal
Pin32	GND				

Pin33	HMT_PCIE_REFCLKN			I	WLAN PCIe reference clock input differential signals
Pin34	HMT_PCIE_REFCLKP			I	
Pin35	GND				
Pin36	HMT_PCIE_TXN0			O	WLAN PCIe transmit output differential signals
Pin37	HMT_PCIE_TXP0			O	
Pin38	GND				
Pin39	HMT_PCIE_RXN0			I	WLAN PCIe receive input differential signals
Pin40	HMT_PCIE_RXP0			I	
Pin41	GND				
Pin42	N79_TX_EN				
Pin43	WL_TXEN_TO_N79				
Pin44	SENS_TXD				
Pin45	WL_EN				
Pin46	NC				
Pin47	NC				
Pin48	NC				
Pin49	NC				
Pin50	NC				
Pin51	NC				
Pin52	NC				
Pin53	BT_WAKEUP_HOST				
Pin54	BT_UART_CTS	1.8V	PD	I	Bluetooth 4-wire UART asynchronous interface. The baud rate is 115.2 k as default, and can be configured up to 3.125 Mbps. Customer can choose either 4-wire BT UART or 2- wire BT USB to interface with the host.
Pin55	BT_UART_TXD		PD	O	
Pin56	BT_UART_RXD		PU	I	
Pin57	BT_UART_RTS		PU	O	
Pin58	BT_I2S_0_WS_GPIO	1.8 V	PD	I	Bluetooth PCM synchronous SYNC or I2S word select for audio
Pin59	BT_I2S_0_SDI_GPIO		NP	I	Bluetooth PCM synchronous data input or I2S serial data input for audio
Pin60	BT_I2S_0_SDO_GPIO		PU	O	Bluetooth PCM synchronous data output or I2S serial data output for audio
Pin61	BT_I2S_0_SCK_GPIO		NP	I	Bluetooth PCM clock or I2S continuous serial clock for audio
Pin62	GND				
Pin63	W_DISABLE2_L	1.8 V	PU	I	Turn off Bluetooth RF analog and frontend. Active low. Bluetooth enable signal. It is an input, active high to enable Bluetooth operation. This pin needs to add pull-up (1.8 V) from platform.
Pin64	BT_LED	1.8 V		O	Bluetooth LED indicator signal, active low. No function by default. The MOSFET is requested from host if you would like to enable the function.

Pin65	LED1		PU	O	WLAN LED indicator signal, active low. No function by default. The MOSFET is requested from host if you would like to enable the function.
Pin66	VIO_1V8				
Pin67	WAKE_BT				
Pin68	GND				
Pin69	NC				
Pin70	NC				
Pin71	GND				
Pin72	3V3				
Pin73	3V3				
Pin74	GND				
Pin75	BT_USB_UART_SEL	GND	NP	I	Supports Bluetooth to USB interface for x86.
Pin76	IO_1V8_SEL	GND	NP	I	The 1.8 V on-board I/O supply for x86.
Pin77	GND				
Pin78	GND				
Pin79	GND				
Pin80	GND				
Pin81	GND				
Pin82	GND				
Pin83	GND				
Pin84	GND				
Pin85	GND				
Pin86	GND				
Pin87	GND				
Pin88	GND				
Pin89	GND				
Pin90	GND				
Pin91	GND				
Pin92	GND				
Pin93	GND				
Pin94	GND				
Pin95	GND				
Pin96	GND				
Pin97	GND				
Pin98	GND				
Pin99	GND				
Pin100	GND				

Pin101	GND				
Pin102	GND				
Pin103	GND				
Pin104	GND				
Pin105	GND				
Pin106	GND				
Pin107	GND				
Pin108	GND				
B23	Reserved				
B24	Reserved				
B25	Reserved				
B32	Reserved				
B33	Reserved				
B34	Reserved				
B57	Reserved				
B58	Reserved				
B59	Reserved				
B66	Reserved				
B67	Reserved				
B68	Reserved				
G1	GND				
G2	GND				
G3	GND				
G4	GND				
G5	GND				
G6	GND				
G7	GND				
G8	GND				
G9	GND				
G10	GND				
G11	GND				
G12	GND				
G13	GND				
G14	GND				
G15	GND				
G16	GND				
G17	GND				
G18	GND				
G19	GND				

G20	GND				
G21	GND				
G22	GND				
G23	GND				
G24	GND				
G25	GND				
G26	GND				
G27	GND				
G28	GND				
G29	GND				
G30	GND				
G31	GND				
G32	GND				
G33	GND				
G34	GND				
G35	GND				
G36	GND				
G37	GND				
G38	GND				
G39	GND				
G40	GND				
G41	GND				
G42	GND				
G43	GND				
G44	GND				
G45	GND				
G46	GND				
G47	GND				
G48	GND				

NOTE:
§ PU contains an internal pull-up device.
§ PD contains an internal pull-down device.
§ NP contains no internal pull.
§ W_DISABLE2_L supports to reset Bluetooth SoC. The platform must add pull-up (1.8 V) Check with Qualcomm customer support team to enable it.
§ W_DISABLE1_L RF radio off function and the I/O only supported 1.8 V.
§ Wi-Fi/LTE coexistence interface. LAA_TX_EN and WL_TX_EN signals are disabled by default. Check with Qualcomm customer support team for this feature support.
§ If connect COEX_TXD, host cannot drive high or pull-up when module boot up because it is a bootstap pin on module side.

INTEGRATION INSTRUCTIONS according to “KDB 996369 D03 OEM Manual”:

2.1 General

Please refer to the relevant content in this User Manual as the relevant information.

2.2 List of applicable FCC rules

The FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247 and Subpart E Section 15.407 has been investigated. These FCC rules are applicable to this modular transmitter

2.3 Summarize the specific operational use conditions

a. This modular transmitter is applicable to “15E 6GHz Low-power Indoor client” only.
b. Transmitters in the 5.925-7.125 GHz band are prohibited from operating to control or communicate with unmanned aircraft systems, including drones.
c. For DFS operational mode, this modular transmitter supports “Client only without Radar Detection” function only.
d. This modular transmitter is approved in the mobile or fixed configuration only with the Advantech Antenna, Type Dipole / RP-SMA Male Connector at 22.5 cm minimum restricted separation distance.
e. This modular transmitter must not be co-located or operated in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter RF Exposure procedures.
f. The OEM/Host Integrator is responsible for complying with the instructions and requirements to integrate this modular into a host product.

2.4 Limited module procedure

This modular transmitter is not a limited module approval procedure.

2.5 Trace antenna designs

The specific Advantech Antenna with Type Dipole / RP-SMA Male Connector is used in this modular transmitter, so the trace antenna designs are not applicable.

2.6 RF exposure considerations

a. This modular transmitter is approved in the mobile or fixed configuration only.
b. This modular transmitter complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 22.5 cm between the radiator and your body or nearby persons.

2.7 Antennas

The specific Advantech Antenna with Type Dipole / RP-SMA Male Connector is used in this modular transmitter as below table:

Ant. No.	Transmitter Circuit	Brand Name	Model Name	Maximum Gain (dBi)	Ant. Type	Connector Type
1	Chain0+1	Advantech	AIW-512-C (1751000460-01)	2.87 dBi : 2400 ~ 2500 MHz 3.11 dBi : 5150 ~ 5850 MHz 3.22 dBi : 5925 ~ 7125 MHz	Dipole	RP-SMA Male
2	Chain0+1	Advantech	AIW-512-I (1751000651-01)	2.87 dBi : 2400 ~ 2500 MHz 3.11 dBi : 5150 ~ 5850 MHz 3.22 dBi : 5925 ~ 7125 MHz	Dipole	RP-SMA Male
3	Chain0+1	Advantech	1751000642-01	1.61 dBi : 2400 ~ 2500 MHz 3.68 dBi : 5150 ~ 5850 MHz 4.06 dBi : 5925 ~ 7125 MHz	Dipole	RP-SMA Male
4	Chain0+1	Advantech	AIW-511 (1751000342-01)	2.28 dBi : 2400 ~ 2500 MHz 2.64 dBi : 5150 ~ 5850 MHz 3.28 dBi : 5925 ~ 7125 MHz	Dipole	RP-SMA Male
5	Chain0+1	Advantech	AIW-513 (1751000717-01)	1.48 dBi : 2400 ~ 2500 MHz 3.58 dBi : 5150 ~ 5850 MHz 4.04 dBi : 5925 ~ 7125 MHz	Dipole	RP-SMA Male
6	Chain0+1	Advantech	AIW-514	ANT0: 2.59 dBi @ 2400 ~ 2500 MHz 3.58 dBi @ 5150 ~ 5850 MHz 3.94 dBi @ 5925 ~ 7125 MHz ANT1: 2.60 dBi @ 2400 ~ 2500 MHz 3.51 dBi @ 5150 ~ 5850 MHz 3.91 dBi @ 5925 ~ 7125 MHz	Dipole	RP-SMA-Male

2.8 Label and compliance information

The following information must be indicated on the host device of this module transmitter "Contains Transmitter Module FCC ID: M82-AIW-173" or "Contains FCC ID: M82-AIW-173".

2.9 Information on test modes and additional testing requirements

This module transmitter is approved as a stand-alone module. If the end product will include multiple, simultaneously transmitting transmitters or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer must consult with module manufacturer for the installation method in end system. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emission limits or band edge limit. If the host product manufacturer finds during these investigative measurements that the transmitter emissions from their product are high and likely to exceed the limit, it may be necessary for the host product manufacturer to work with the module manufacturer to consider more thorough investigation and mitigation measures. If the host product manufacturer does find the composite system (host product and modular transmitter) does exceed the spurious emission or output power limit. It is the responsibility of the host product manufacturer not to market the product in the U.S.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

As long as all conditions above are met, further transmitter tests will not be required. However, the OEM integrator is still responsible to test their end-product for any additional compliance requirements required with this modular transmitter installed.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), 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 part) 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 modular transmitter in the user manual of the end product which integrates this modular transmitter. The end user manual shall include all required regulatory information and warning as shown in this manual.

USER MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 22.5 cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the user manual:
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.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following: “Contains FCC ID: M82-AIW-173”. If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: 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.

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 or more 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.

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

RF exposure statements:
This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 22.5 cm between the radiator and your body or nearby persons.

The operation shall be limited to indoor use only.

Transmitters in the 5.925-7.125 GHz band are prohibited from operating to control or communicate with unmanned aircraft systems, including drones.