USRP 2901 introduction

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Difference between 2920 and 2901

	2920	2901
# of Rx	Support 1Rx	Support 2 Rx
Connection with computer	IP	SerialNum
Center frequency	50MHz~ 2.2GHz	70MHz~6GHz
Master clock rate	100MHz (read only)	<30MHz (when 2 Rx)

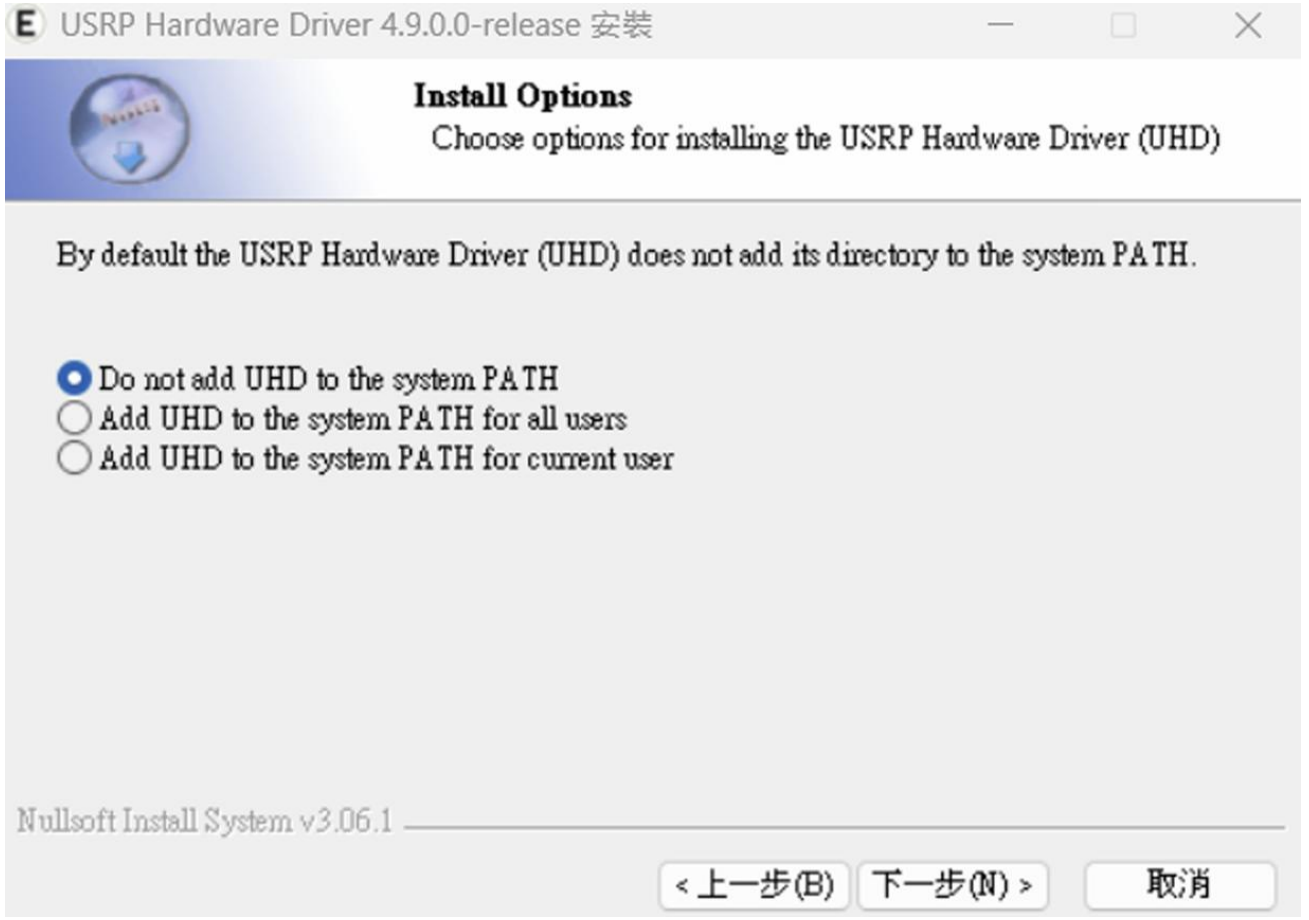
How to connect USRP 2901 using Matlab

- Unlike USRP 2920 series, we need to install the UHD driver for 2901 manually.
- First, we should download the installer from Ettus Research

Name	Last modified	Size	Description
Parent Directory		-	
uhd_4.9.0.0-release_..>	2025-09-04 23:44	189M	
uhd_4.9.0.0-release_..>	2025-09-04 23:45	189M	

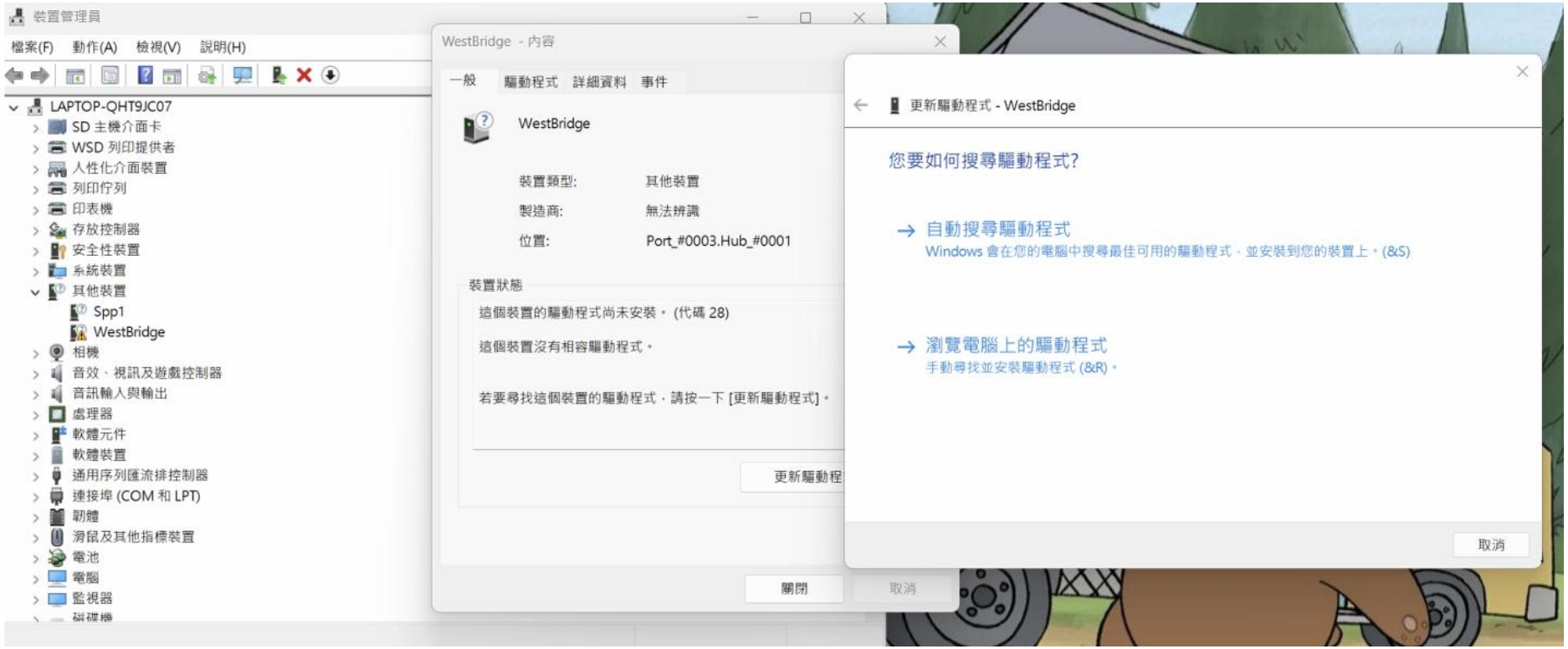
Step 2 : Install the UHD driver

The default setting works for me



Step 3 : Install the driver for USRP 2901

- Go to 裝置管理員 -> 其他裝置 -> WestBridge -> 更新驅動程式-> 瀏覽電腦上的驅動程式




更新驅動程式 - WestBridge
在您的電腦上瀏覽驅動程式
在此位置搜尋驅動程式:
C:\Program Files\UHD
瀏覽(R)...
包含子資料夾(I)
讓我從電腦上的可用驅動程式清單中挑選(L)
此清單將會顯示與裝置相容的可用驅動程式，以及與裝置屬於同類別的所有驅動程式。
下一步(N)
取消

Step 4: Connect and find SerialNum

- Connect USRP and computer without power
- The SerialNum can be found using command "findsdru"

```
>> findsdru
Checking radio connections...

ans =

  struct with fields:

     Platform: 'B210'
   IPAddress: ''
   SerialNum: '315EECD'
      Status: 'Success'
```

USRP’s name

Transmit and receive on 2901

- When transmitting and receiving signal, the light beside the port will turn on
- Gain might be different when connecting with or without power

```
radio_Tx = comm.SDRuTransmitter(...
                'Platform',             "B210", ...
                'SerialNum',            "315EECD",  ...
                'CenterFrequency',      USRPCenterFrequency, ...
                'MasterClockRate',      20e6,...
                'Gain',                 20,...
                'InterpolationFactor',     2);
radio_Rx = comm.SDRuReceiver(...
             'Platform',             "B210", ...
             'SerialNum',            "315EECD",  ...
             'CenterFrequency',      USRPCenterFrequency, ...
             'SamplesPerFrame',      rx_length, ...
             'MasterClockRate',      20e6,...
             'Gain',                 20, ...
             'DecimationFactor',     2,...
             'OutputDataType',       'double') ;
```

Transmit by 2920 and receive by 2901 (1 RX)

```
radio_Tx = comm.SDRuTransmitter(...
                    'Platform',             "N200/N210/USRP2", ...
                    'IPAddress',            "192.168.10.2",  ...
                    'CenterFrequency',      USRPCenterFrequency, ...
                    'Gain',                 5,...
                    'MasterClockRate',      100e6, ...
                    'InterpolationFactor',     10);
radio_Rx = comm.SDRuReceiver(...
             'Platform',            "B210", ...
             'SerialNum',           "315EECD",  ...
             'CenterFrequency',     USRPCenterFrequency, ...
             'SamplesPerFrame',     rx_length, ...
             'MasterClockRate',     20e6,...
             'Gain',                20, ...
             'DecimationFactor',    2,...
             'OutputDataType',      'double') ;
```

Use “findsdru” to check that both USRP are connected to computer

Transmit by 2920 and receive by 2901 (2 RX)

```
radio_Tx = comm.SDRuTransmitter(...
                    'Platform',             "N200/N210/USRP2", ...
                    'IPAddress',            "192.168.10.2",  ...
                    'CenterFrequency',      USRPCenterFrequency, ...
                    'Gain',                 5,...
                    'MasterClockRate',      100e6, ...
                    'InterpolationFactor',     10);

radio_Rx = comm.SDRuReceiver(...
                  'Platform',             "B210", ...
                  'SerialNum',            "315EECD",  ...
                  'CenterFrequency',      USRPCenterFrequency, ...
                  'SamplesPerFrame',      rx_length, ...
                  'ChannelMapping',       [1,2],...
                  'MasterClockRate',      20e6,...
                  'Gain',                 [20 5], ...
                  'DecimationFactor',     2,...
                  'OutputDataType',       'double') ;
```