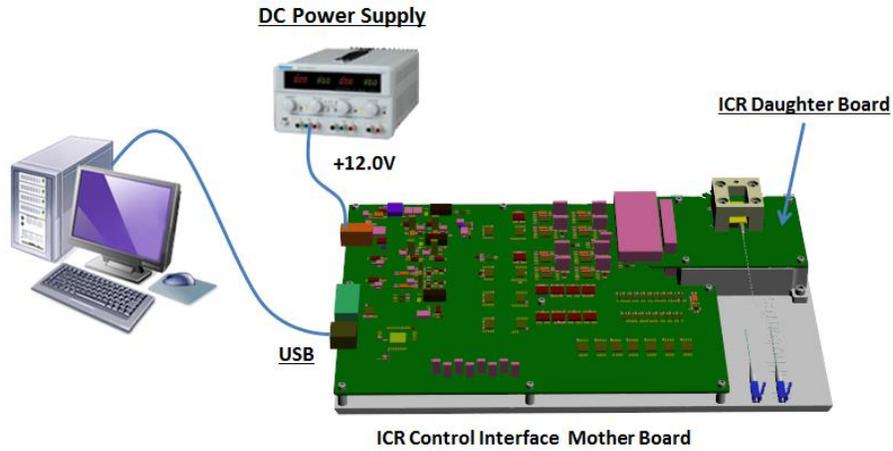


### Minimum System and Hardware Requirement

1. Operating system: 32-bit Windows XP SP3 or Windows 7 SP1 with Microsoft .NET Framework 4.0 installed.
2. Power supply: DC +12.0V/1.0A.



NeoPhotonics ICR Control Interface Hardware Setup

## Software and USB Driver Installation on Windows XP OS

1. Follow One-button-Install, and complete the installation as prompted.



2. After software installation, the USB driver must be installed.
  - a) Disconnect the USB port to the evaluation board, before driver installation.
  - b) Run the USB driver installation software. The program can be found in the installation directory. Its shortcut is located in Start Menu:



- c) The USB driver will be installed automatically.



- d) Warning dialog boxes generated MS Windows may occur. It is recommended to click "Continue Anyway"
- e) Wait for successful installation completion dialog box.

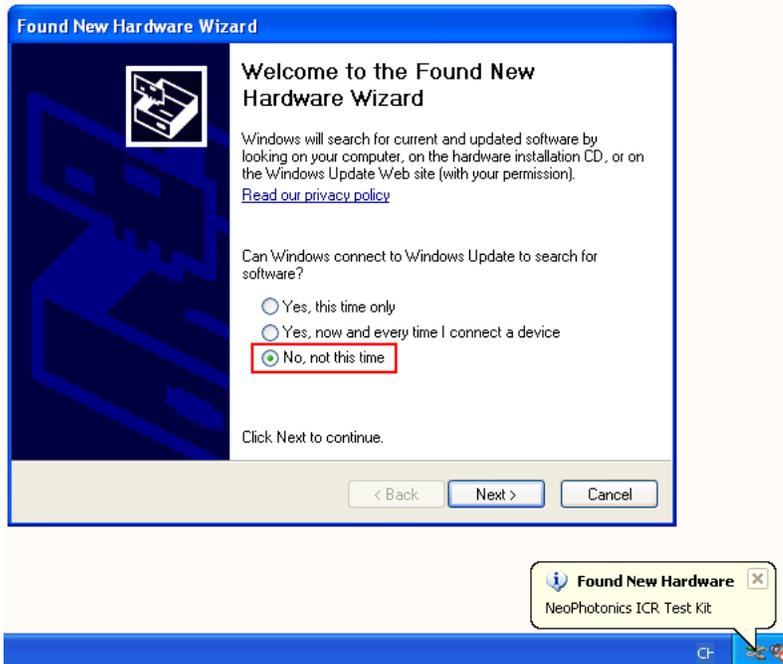


3. Power on Mother Board and connect Mother Board to the computer by USB cable. Follow the step-by-step instructions once the new hardware is detected.

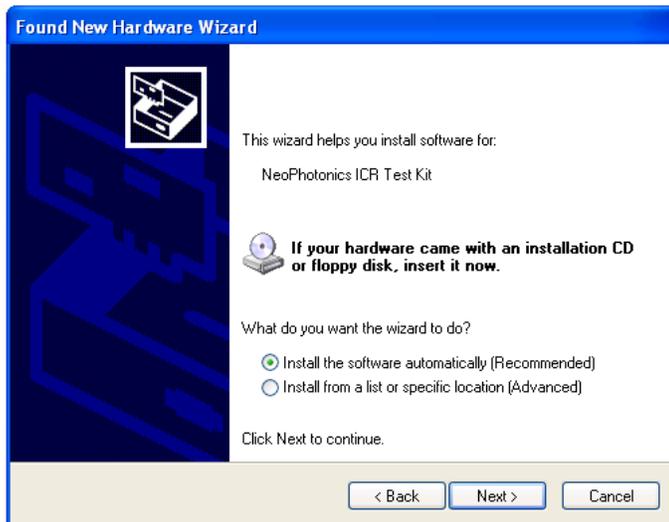
**Note:** If system asks to select SiUXBxp.sys, it can be found in subfolder 'x86' of USB driver directory, for example: C:\Program Files\NeoPhotonics\ICRTestKit USBXpress\x86\ SiUXBxp.sys.

The sequence of dialog boxes are typically as follows:

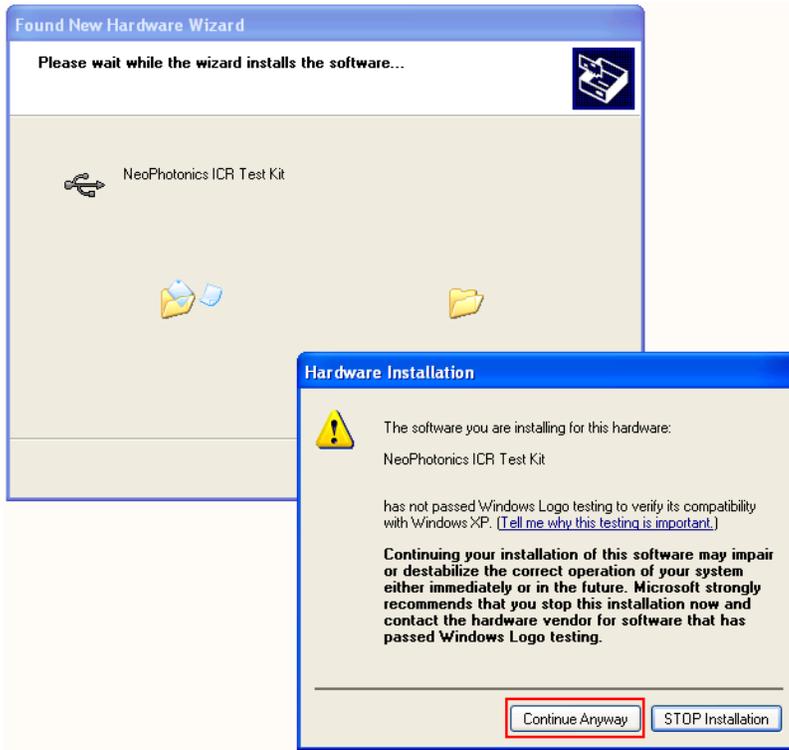
a)



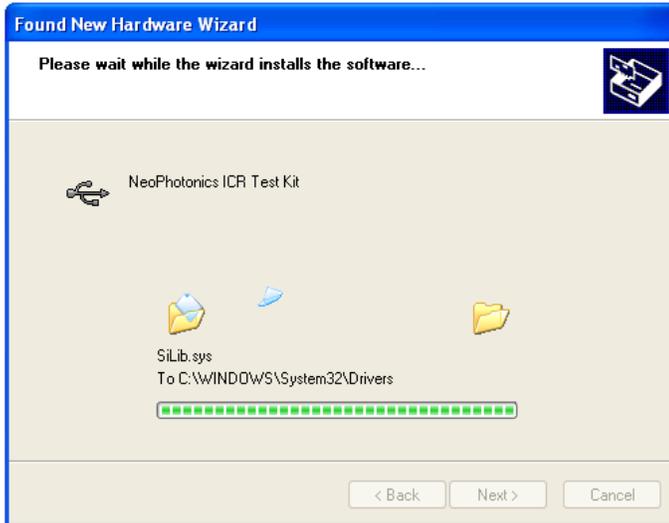
b)



c) Recommended:



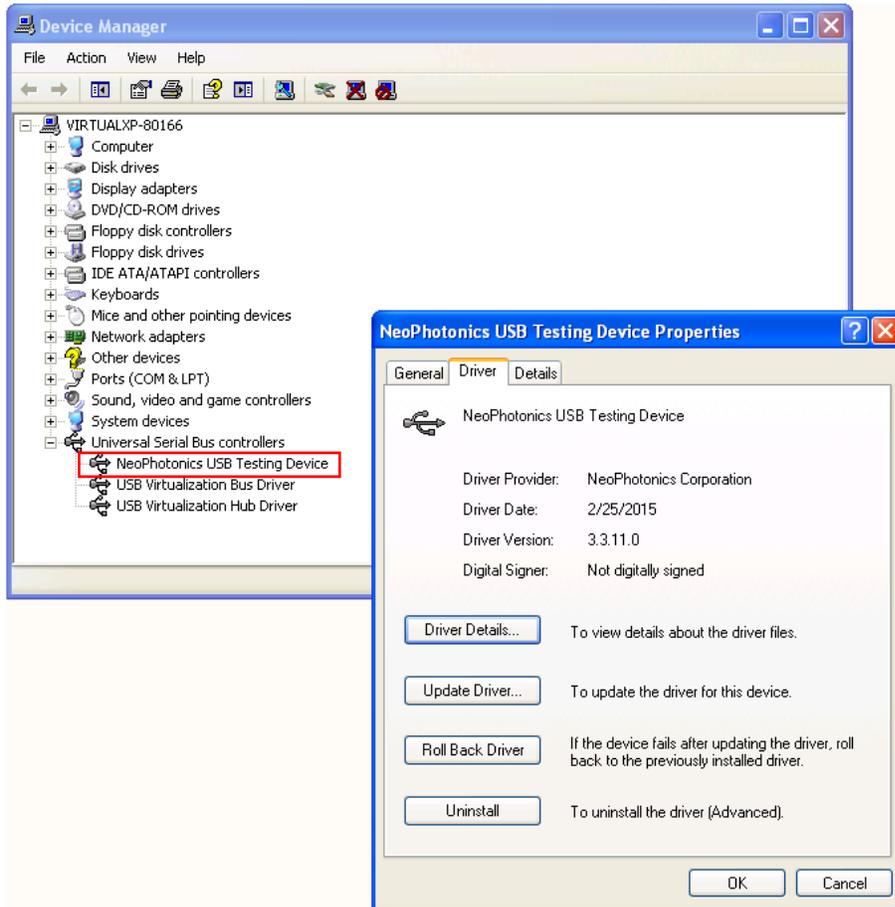
d)



e)



4. The new device can be found in Windows Device Manager.



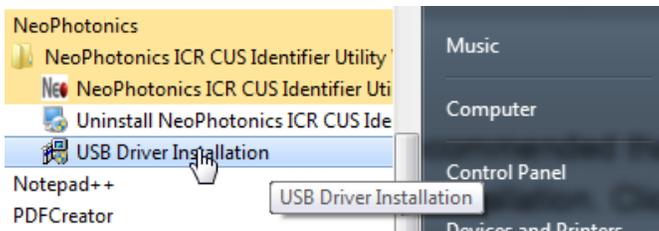
## Software and USB Driver Installation on Windows 7 OS

1. Follow One-button-Install, and complete the installation as prompted.

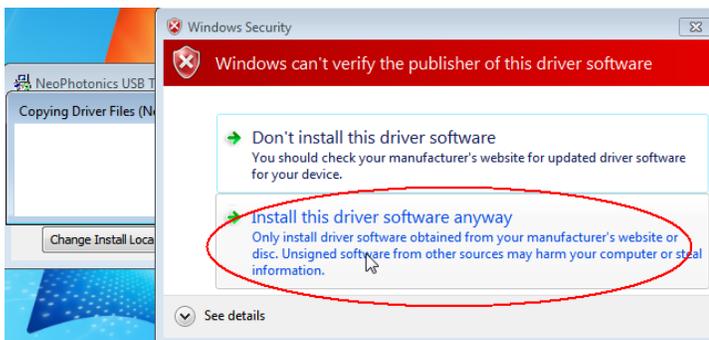
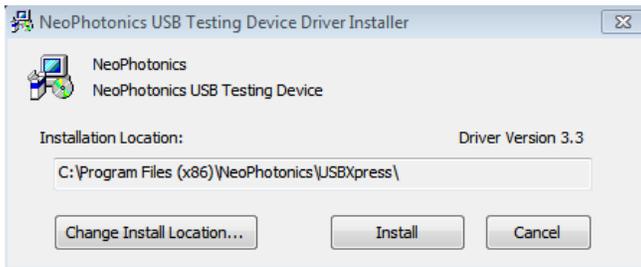


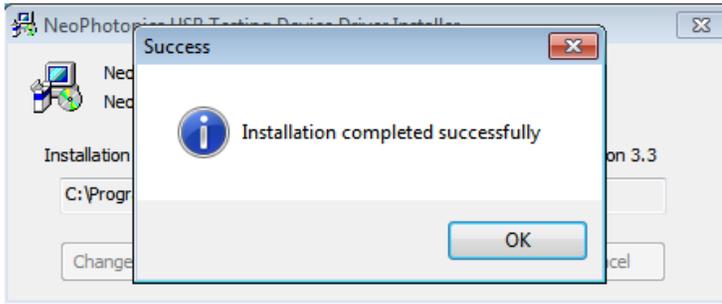
2. After software installation, the USB driver must be installed

- a) Disconnect the USB port to the evaluation board, before driver installation.
- b) Run the USB driver installation software. The program can be found in the installation directory. Its shortcut is located in Start Menu

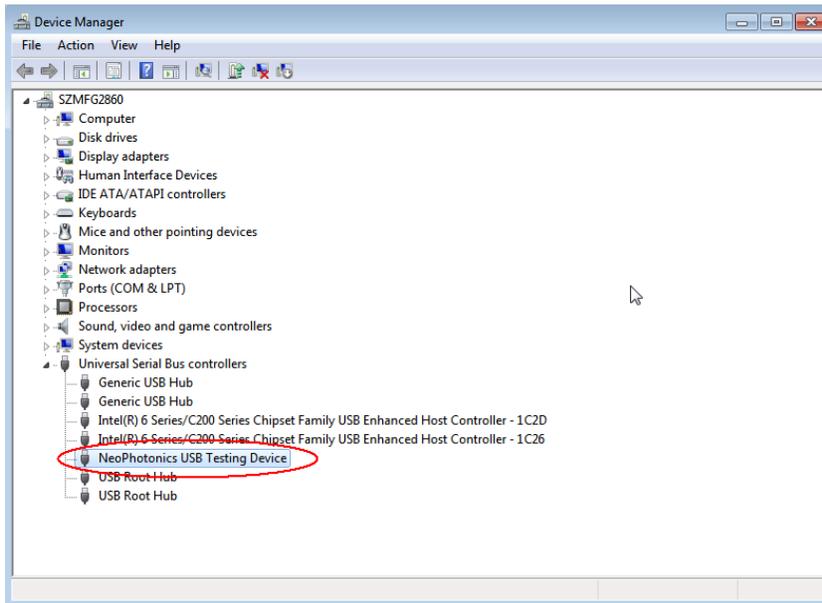


- c) Follow step by step instructions, as prompted:





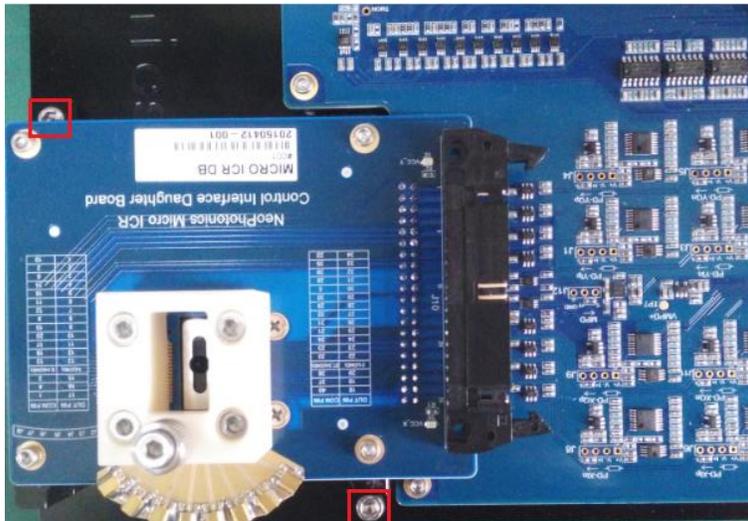
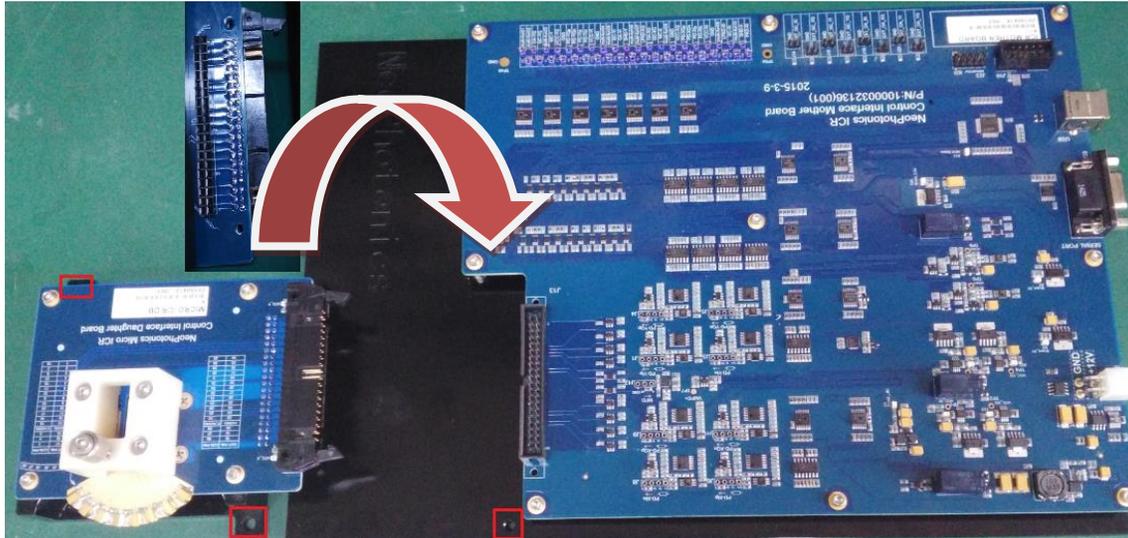
3. Power on Mother Board and connect Mother Board to the computer by USB cable. Follow the step-by-step instructions once the new hardware is detected.
4. The new device can now be found in Windows Device Manager:



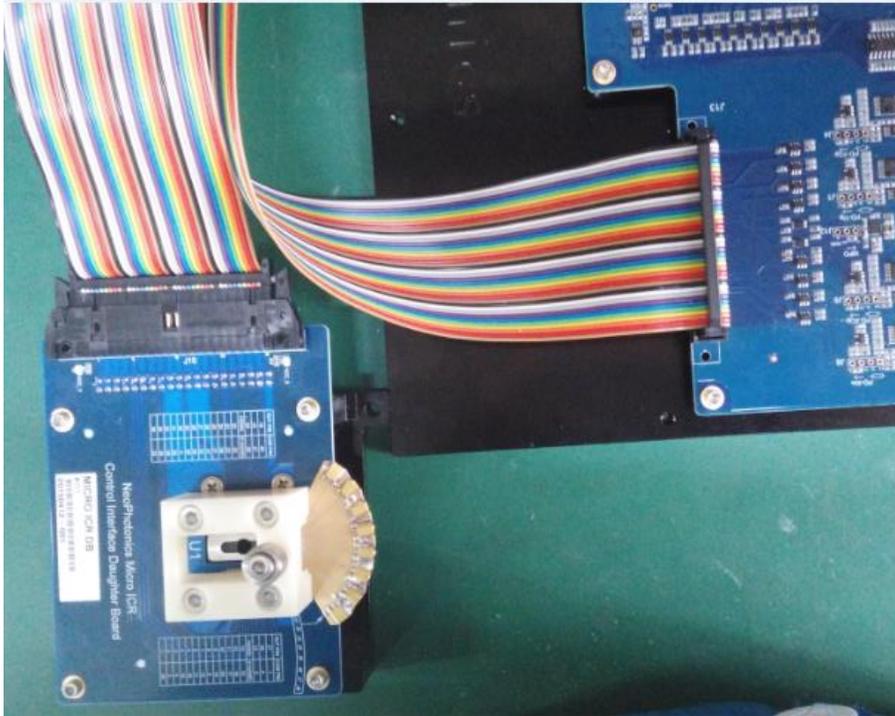
## Connection between Mother Board and Daughter Board

There are two possible configurations to connect Mother Board and Daughter Board.

1. Mounting Daughter Board on Mother Board Directly
  - a) Insert Daughter Board female-connector into Mother Board male-connector.
  - b) Make sure two screws hole are aligned.
  - c) Pushing Daughter Board lightly
  - d) Secure connection with the 2 screws.

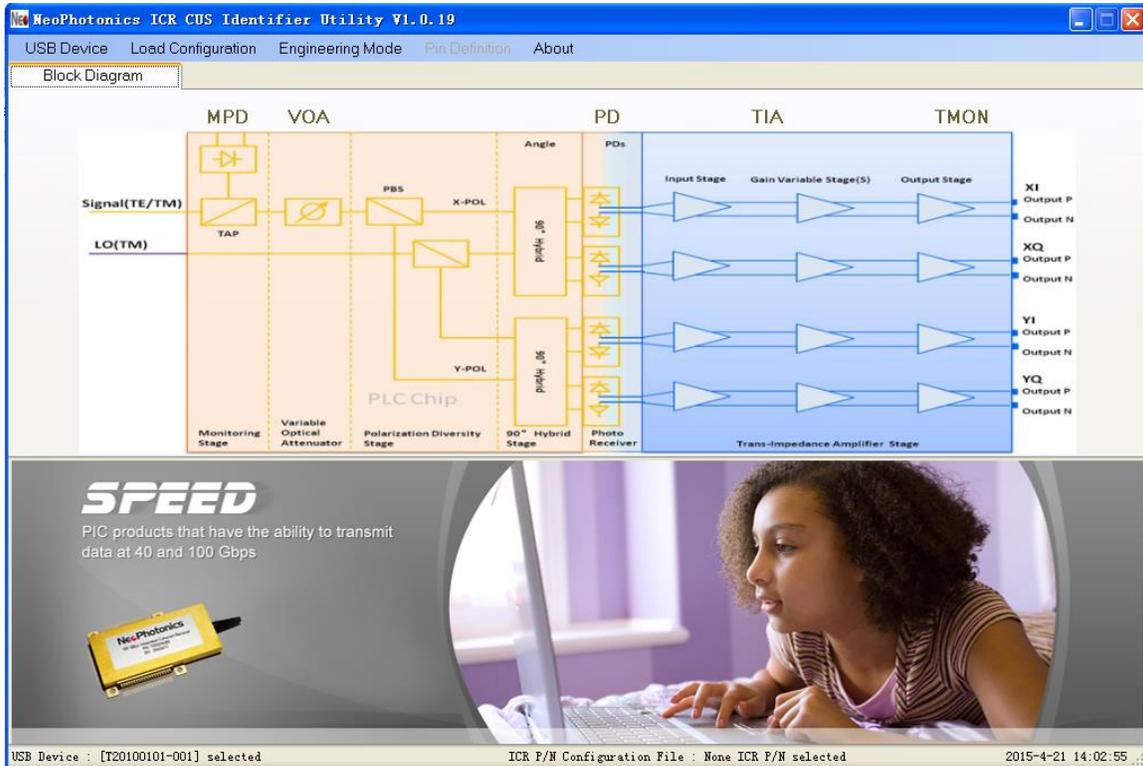


2. Connecting Daughter Board and Mother Board with ribbon cable:
  - a) Replicate the set-up below:

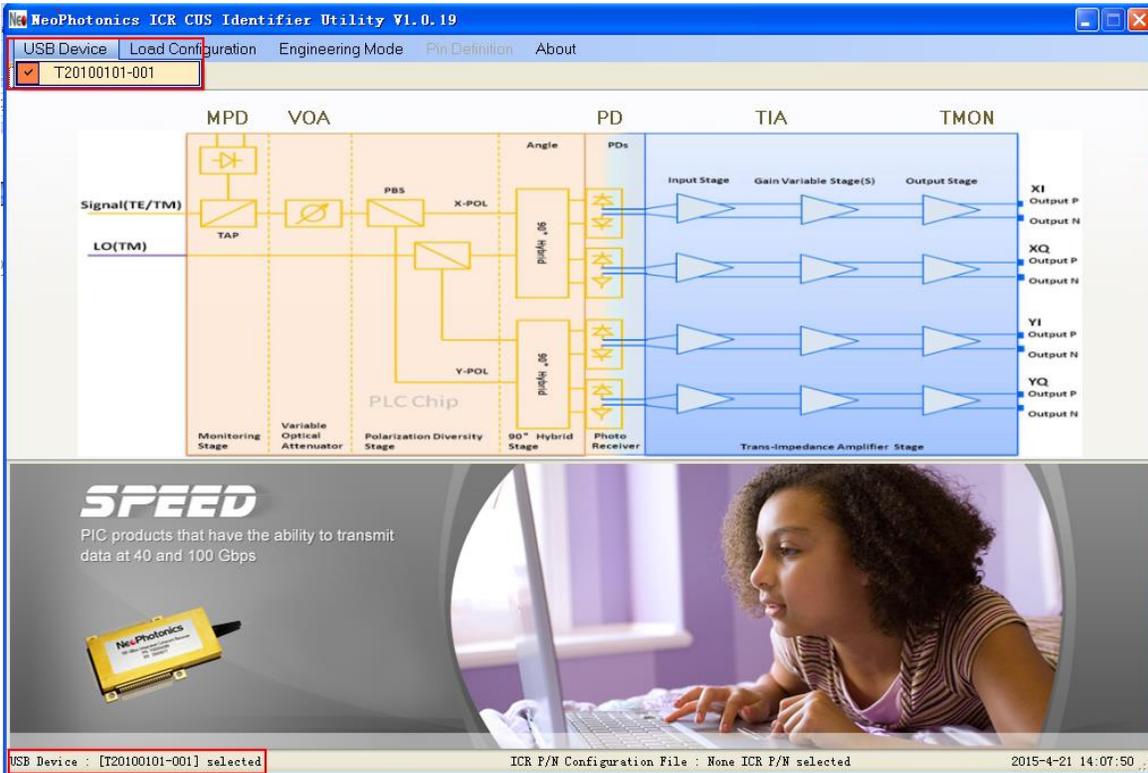


## Software Utility Set-Up

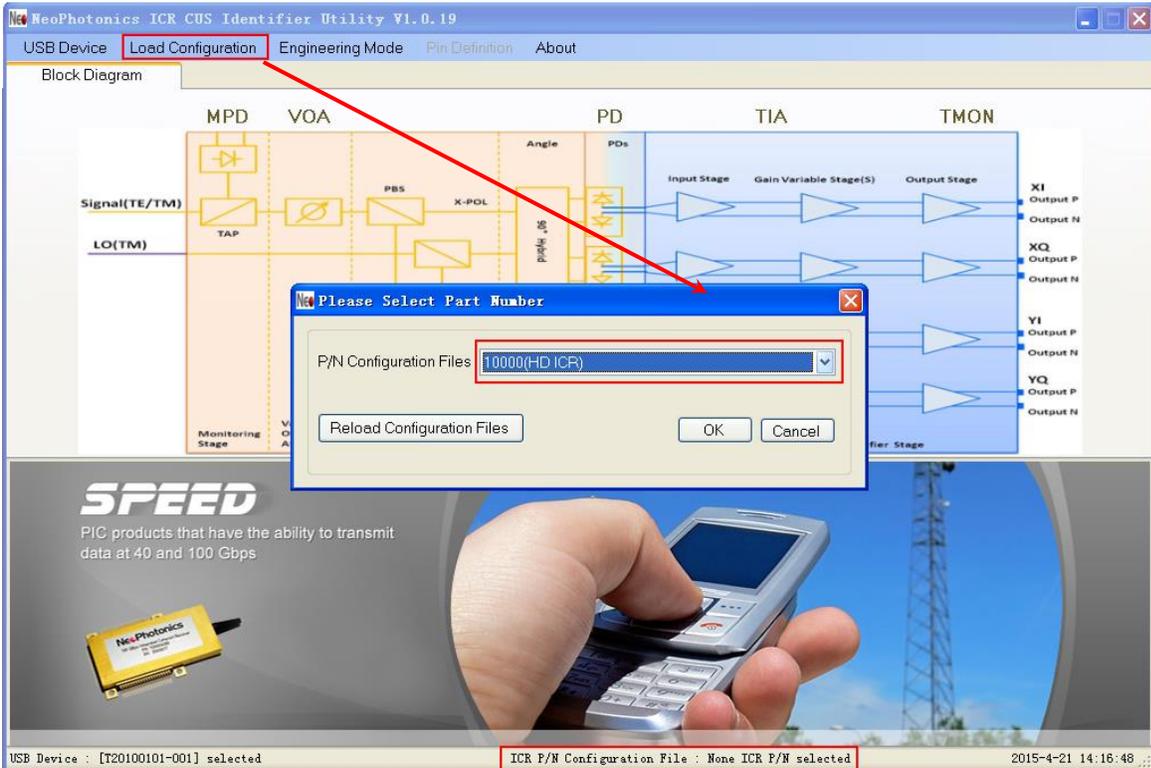
1. Run 'NeoPhotonics ICR CUS Identifier Utility'.
2. Make sure that the Mother Board is powered on with +12V power supply and USB port connection between Mother Board and host computer is OK.
3. Open 'USB Device' menu



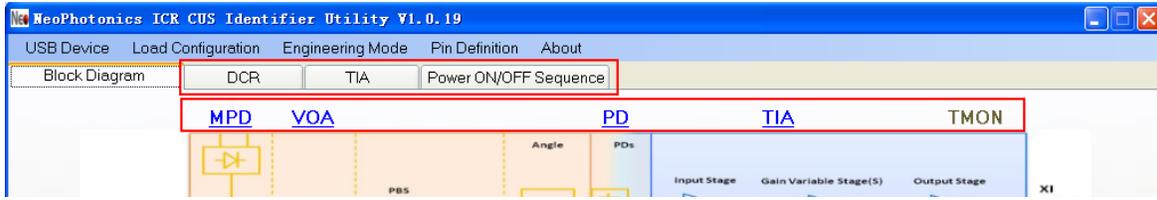
4. The supported communication ports appear, select the correct USB port with Mother Board Serial Number (see label on Mother Board).



- 5. Open 'Load Configuration' menu and select the appropriate ICR configuration file (configuration files were installed in the application folder).

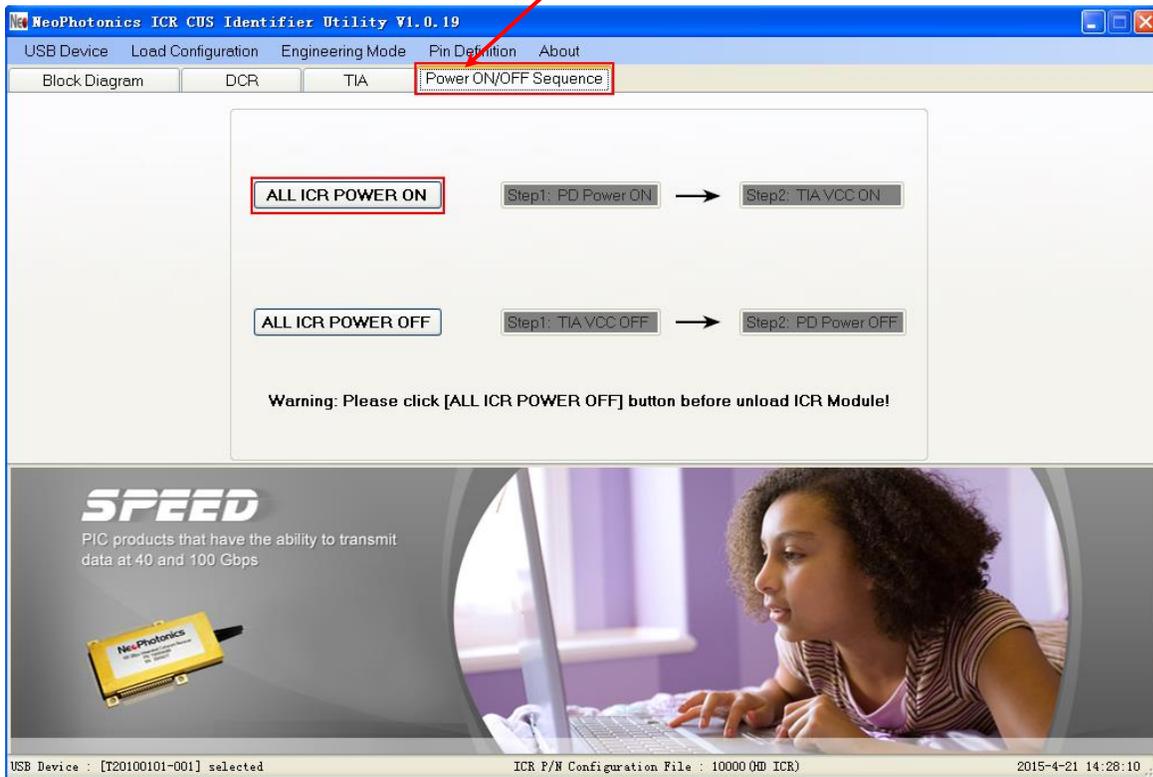


6. After loading ICR Configuration file, all functional menus and buttons related to this ICR are ready to use.



## ICR Power On/Off

1. ICR Power ON: Select table 'Power ON/OFF sequence' for ICR Power ON/OFF operation.  
The recommended ICR power-on sequence is (1) PD Bias, then (2) TIA VCC. The Software will follow this power on sequence.

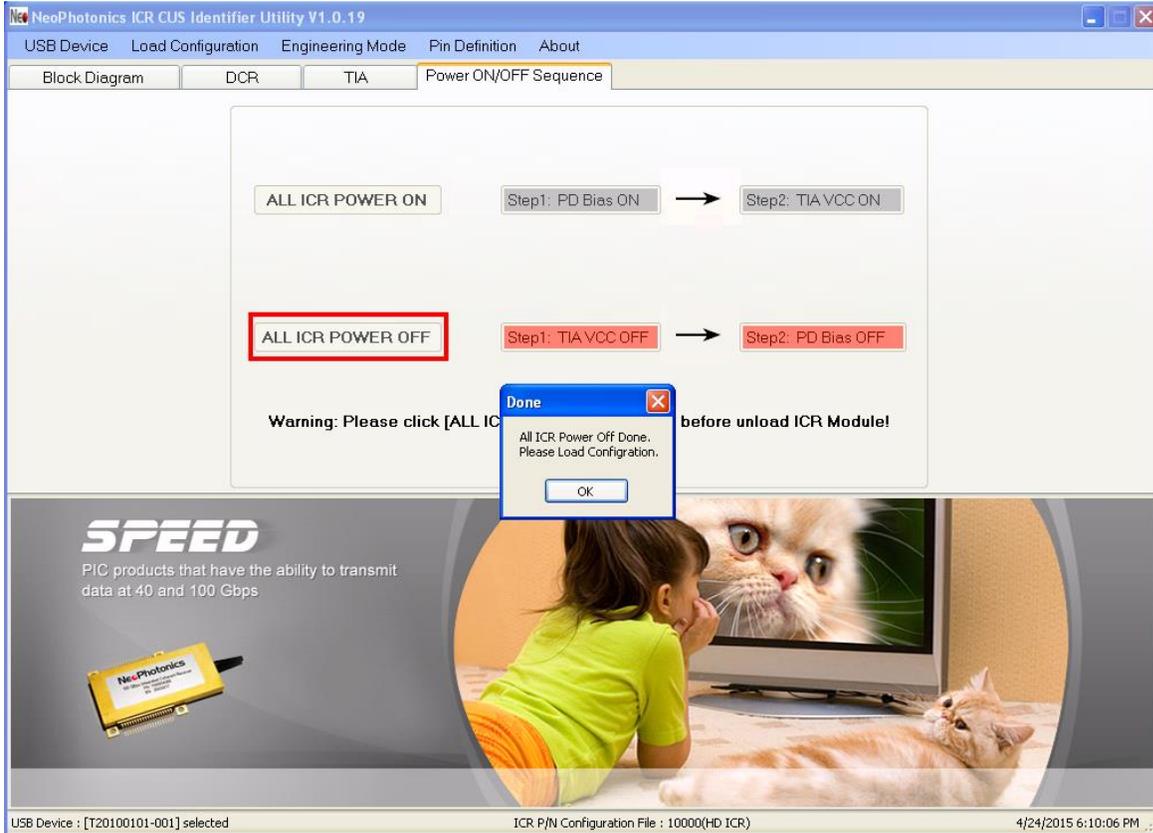


The screenshot shows the NeoPhotonics ICR CUS Identifier Utility V1.0.19 software interface. The main window has a menu bar with 'USB Device', 'Load Configuration', 'Engineering Mode', 'Pin Definition', and 'About'. Below the menu bar are tabs for 'Block Diagram', 'DCR', 'TIA', and 'Power ON/OFF Sequence'. The 'Power ON/OFF Sequence' tab is active, displaying two sequences:

- ALL ICR POWER ON:** A sequence of three steps: 'ALL ICR POWER ON' (grey button), 'Step1: PD Bias ON' (green button), and 'Step2: TIA VCC ON' (green button), connected by arrows.
- ALL ICR POWER OFF:** A sequence of three steps: 'ALL ICR POWER OFF' (grey button), 'Step1: TIA VCC OFF' (grey button), and 'Step2: PD Bias OFF' (grey button), connected by arrows.

Below the sequences is a warning: 'Warning: Please click [ALL ICR POWER ON] before unload ICR Module!'. A 'Done' dialog box is overlaid on the interface, containing the text: 'All ICR Power On Done. PD Bias Voltage: 4.7 V TIA VCC Voltage: 3.3 V' and an 'OK' button. The bottom status bar shows 'USB Device : [T20100101-001] selected', 'ICR P/N Configuration File : 10000(HD ICR)', and the date/time '4/24/2015 5:59:04 PM'. A banner at the bottom left features the 'SPEED' logo and text: 'PIC products that have the ability to transmit data at 40 and 100 Gbps', along with an image of a NeoPhotonics module. A circular inset image on the right shows a child looking at a computer monitor displaying a cat's face, with a real cat lying on the floor in front of the monitor.

- ICR Power OFF: Select table 'Power ON/OFF sequence' for ICR Power ON/OFF operation. The recommended ICR power-on sequence is (1) TIA Vcc Off, then (2) PD bias. The Software will follow this power off sequence. It is recommended to follow this sequence at the end of the test session.



- The software also supports manual power-on/off operation. Select DCR page for PD Bias control, and TIA page for TIA VCC setting.

NeoPhotonics ICR CUS Identifier Utility V1.0.19

USB Device Load Configuration Engineering Mode Pin Definition About

Block Diagram DCR TIA Power ON/OFF Sequence

**PD**

	PD Bias	PD Current
PD-Xip	4.7 V	0 $\mu$ A
PD-XIn	4.7	0
PD-XQp	4.7	0
PD-XQn	4.7	0
PD-Yip	4.7	0
PD-YIn	4.7	0
PD-YQp	4.7	0
PD-YQn	4.7	0

Get Voltage Set Voltage Get Current

**All PD Bias On** **All PD Bias Off**

**MPD**

MPD Bias 4.7 V Set Voltage

0 nA Get Current

**TMON**

TMON 3 V Set Voltage

0  $\mu$ A Get Current

**VICR-VOA**

VOA-V1 0 V Set Voltage

VOA-V2 0 Get Voltage

V1 Current 0 mA Get Current

V2 Current 0

**SPEED**  
PIC products that have the ability to transmit data at 40 and 100 Gbps

USB Device : [T20100101-001] selected ICR P/N Configuration File : 10000(HD ICR) 4/24/2015 6:34:24 PM

NeoPhotonics ICR CUS Identifier Utility V1.0.19

USB Device Load Configuration Engineering Mode Pin Definition About

Block Diagram DCR TIA Power ON/OFF Sequence

**TIA VCC**

VCC-YI	3.3 V	VCC-XI	0 mA
VCC-YQ	3.3	VCC-XQ	0
VCC-YI	3.3	VCC-YI	0
VCC-YQ	3.3	VCC-YQ	0

Get Voltage Set Voltage **All TIA VCC ON** Get Current

**TIA PKD**

PKD-XI	0 mV
PKD-XQ	0
PKD-YI	0
PKD-YQ	0

Get Voltage

**BWC**

X_BWH	0 V
X_BWL	0
Y_BWH	0
Y_BWL	0

Set Voltage

**AGC/MGC**

MC-X	0 V	GC-XI	0 V	Set Voltage
MC-Y	0	GC-XQ	0	
SHD-X	0	GC-YI	0	Get Voltage
SHD-X	0	GC-YQ	0	
OA-XI	0 V	GC-XI	0 mV	Get GC
OA-XQ	0	GC-XQ	0	
OA-YI	0	GC-YI	0	
OA-YQ	0	GC-YQ	0	External Ctrl

**PDB\_ID**

PDB\_ID 0 mV Get Voltage

**SPEED**  
PIC products that have the ability to transmit data at 40 and 100 Gbps

USB Device : [T20100101-001] selected ICR P/N Configuration File : 10000(HD ICR) 4/24/2015 6:36:38 PM

## ICR Operation

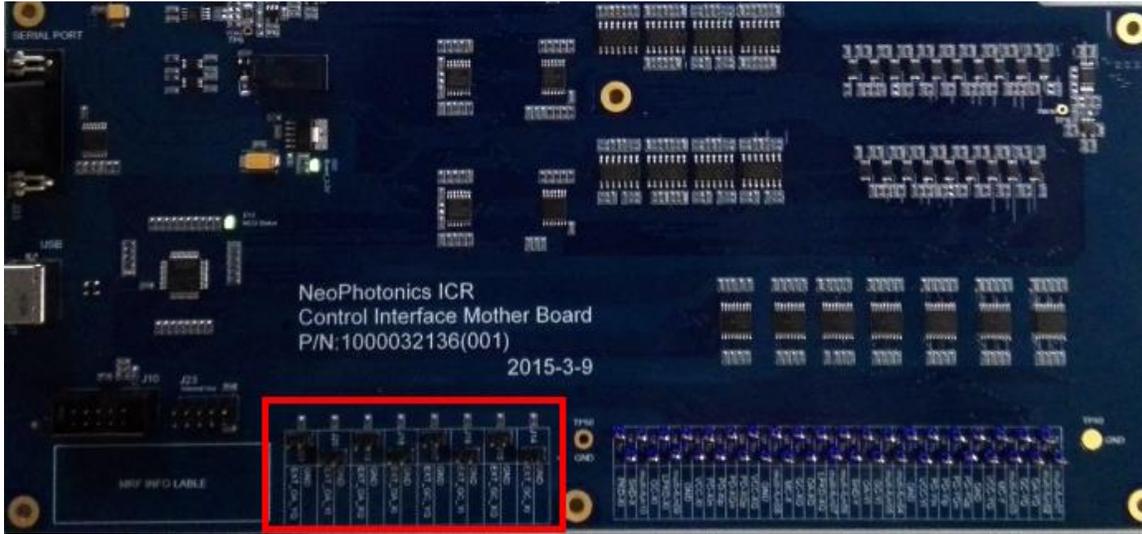
### 1. Software Control

Software interface allows to set the control voltages to the device by using DCR and TIA control tables. The on-board precision is based on a 16-bit DAC.

### 2. External Control

Gain control or Output amplitude adjustments can be done externally. In TIA control table click on “External Ctrl”, then select which input to be controlled externally.

Input pins on Mother Board (J14 to J21) can be used for direct control of the voltages.



The screenshot shows the NeoPhotonics ICR CUS Identifier Utility V1.0.19 software interface. The 'TIA' tab is selected, displaying various configuration options for TIA VCC, TIA PKD, and AGC/MGC. A dialog box titled 'External Input Pin on Mother Board' is overlaid on the main window. This dialog box contains a table with two columns: 'Control Option' and 'External Input Pin Name'. The 'Control Option' column lists GC-XI, GC-XQ, GC-YI, GC-YQ, OA-XI, OA-XQ, OA-YI, and OA-YQ. The 'External Input Pin Name' column lists J14 EXT\_GC\_XI, J15 EXT\_GC\_XQ, J16 EXT\_GC\_YI, J17 EXT\_GC\_YQ, J18 EXT\_OA\_XI, J19 EXT\_OA\_XQ, J20 EXT\_OA\_YI, and J21 EXT\_OA\_YQ. There are 'All Selected' and 'All UnSelected' buttons, and a legend indicating 'Selected: External Control' and 'Unselected: Mother Board Control'. The status bar at the bottom shows 'USB Device : [T20100101-001] selected', 'ICR P/N Configuration File : 10000(HD ICR)', and the date/time '4/24/2015 6:41:25 PM'.

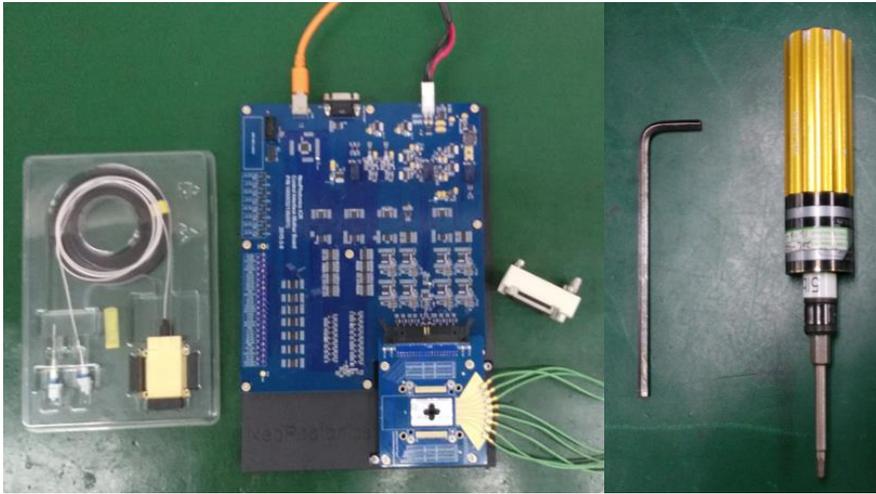
Control Option	External Input Pin Name
<input type="checkbox"/> GC-XI	J14 EXT_GC_XI
<input type="checkbox"/> GC-XQ	J15 EXT_GC_XQ
<input type="checkbox"/> GC-YI	J16 EXT_GC_YI
<input type="checkbox"/> GC-YQ	J17 EXT_GC_YQ
<input type="checkbox"/> OA-XI	J18 EXT_OA_XI
<input type="checkbox"/> OA-XQ	J19 EXT_OA_XQ
<input type="checkbox"/> OA-YI	J20 EXT_OA_YI
<input type="checkbox"/> OA-YQ	J21 EXT_OA_YQ

## Appendix: ICR Mounting and Un-mounting

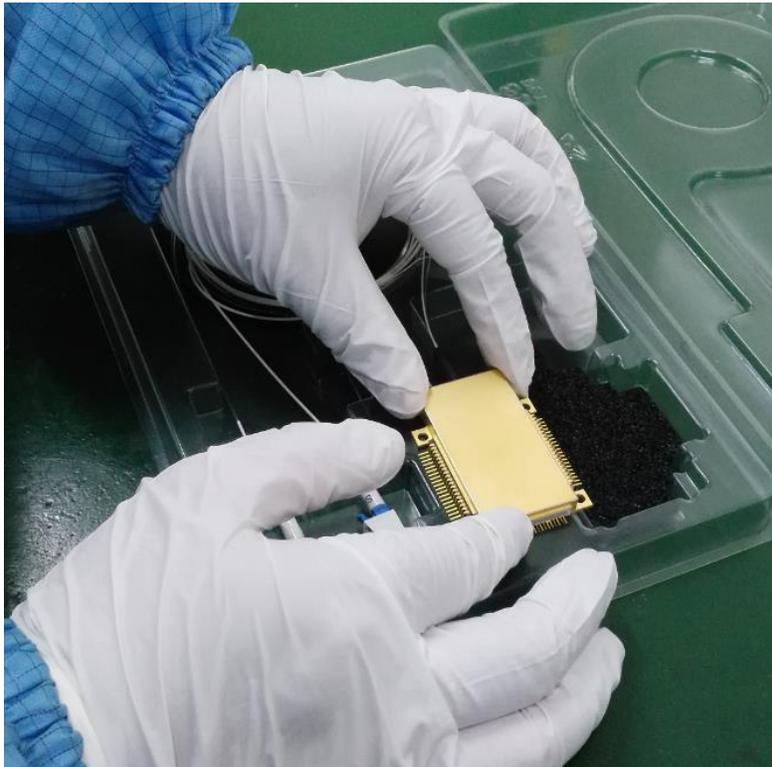
### Mounting ICR to Daughter Board

1. Make sure the around of Mother Board are clean and no hard and spiked components. Make sure the work bench are roomy.

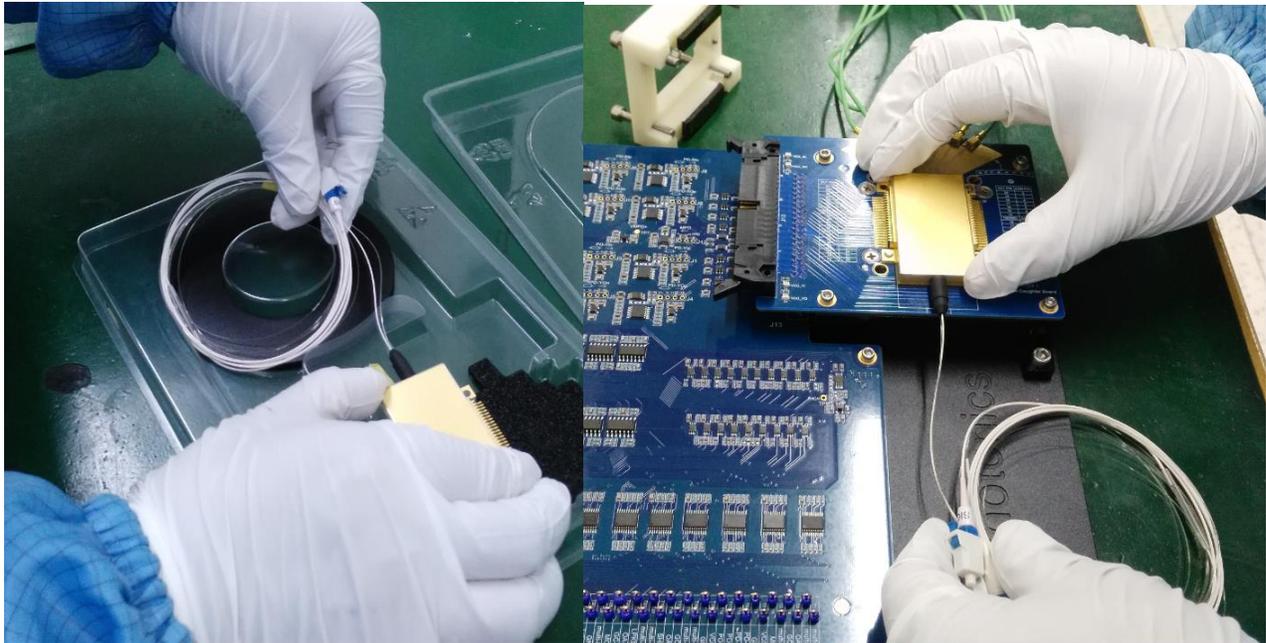
Tools: screw tool, fiber cleaner,end face inspector.



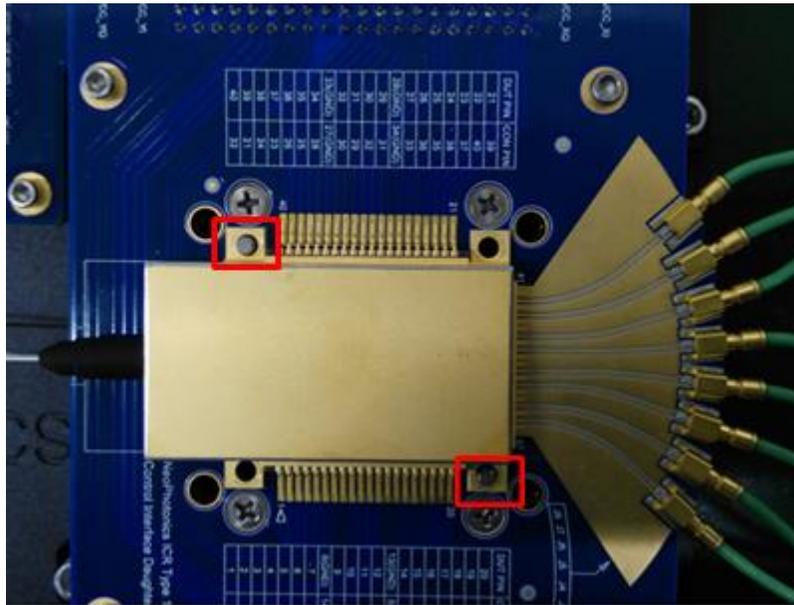
2. Open the packing box and take away the foam beside of ICR, then move out the ICR from the bed carefully and put it on the box which can be moved easily.



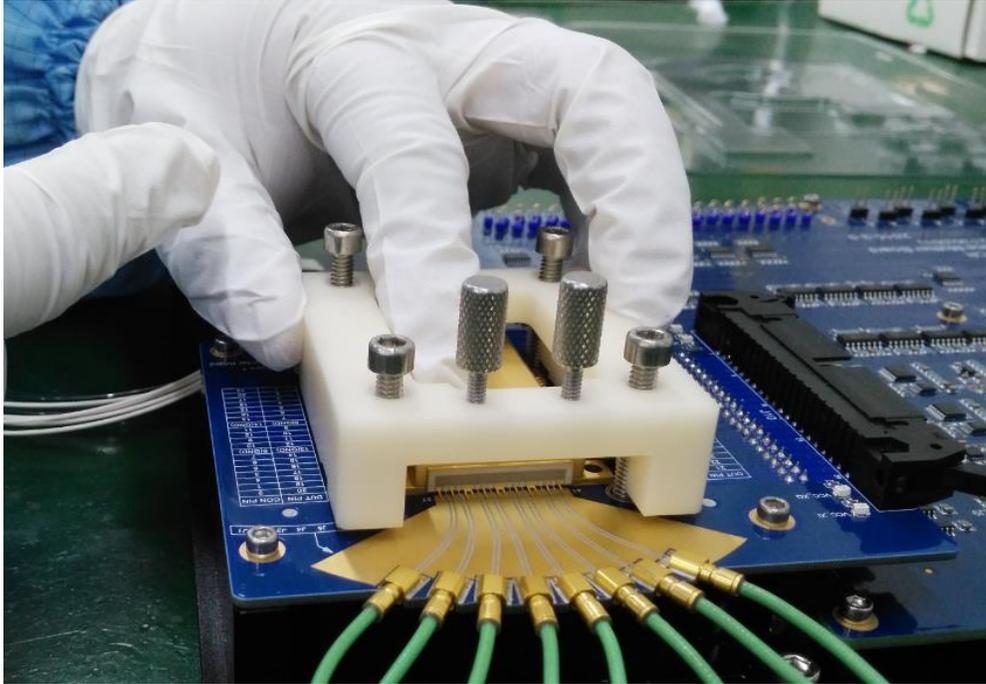
3. Use right hand hold ICR diagonally, use left hand hold fiber ring and connector carefully and move it to daughter board and put on it.



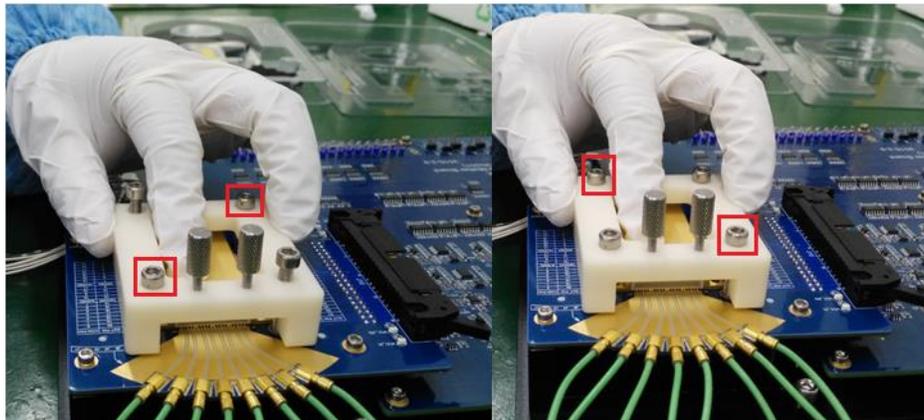
4. When put ICR on board, please take care that ICR hole aligned with two pillars. Then move ICR lightly and make sure all DC pins and RF pins be aligned well with PCB gold finger.



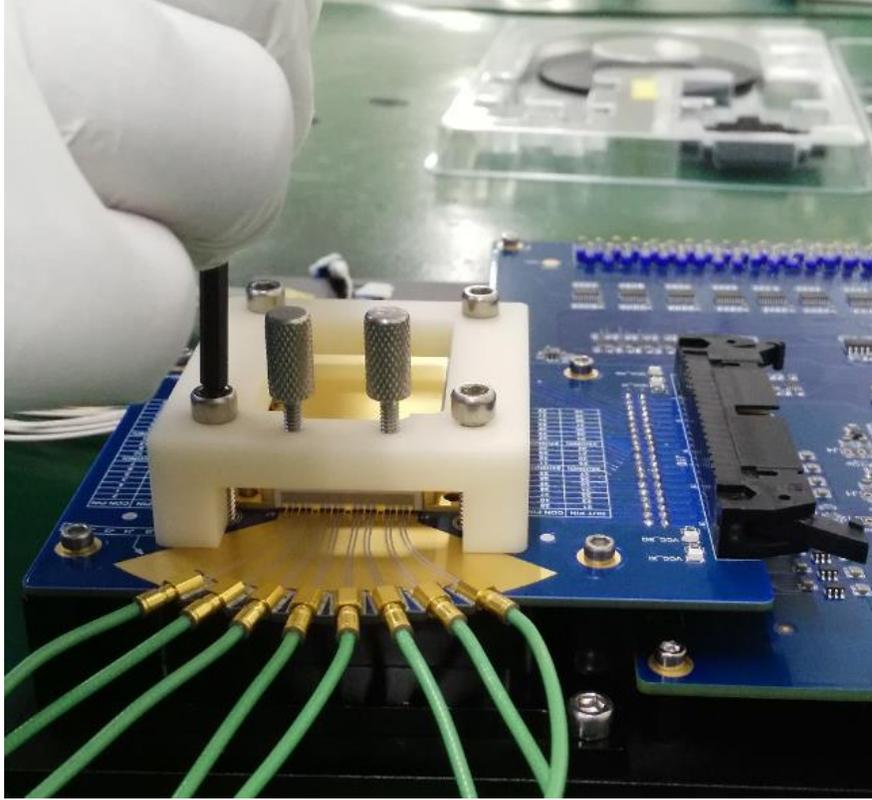
5. Mount clamp on ICR, Please make sure 4screws are aligned well with 4screw holes, use index finger press ICR top lightly and make sure ICR can not move ,press the clamp slightly make sure the clamp touched PCB.



6. Using screw tool pre-tighten four screws diagonally.

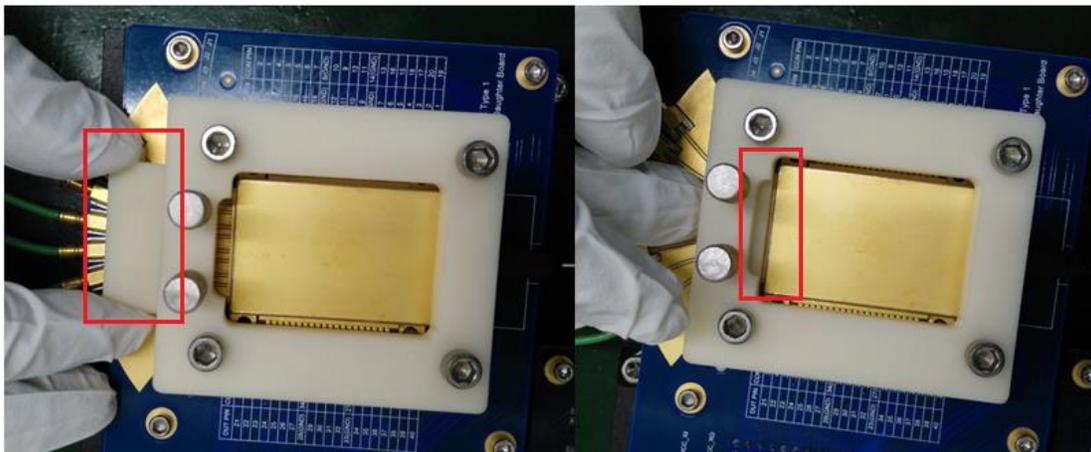


7. Tightening four screws.

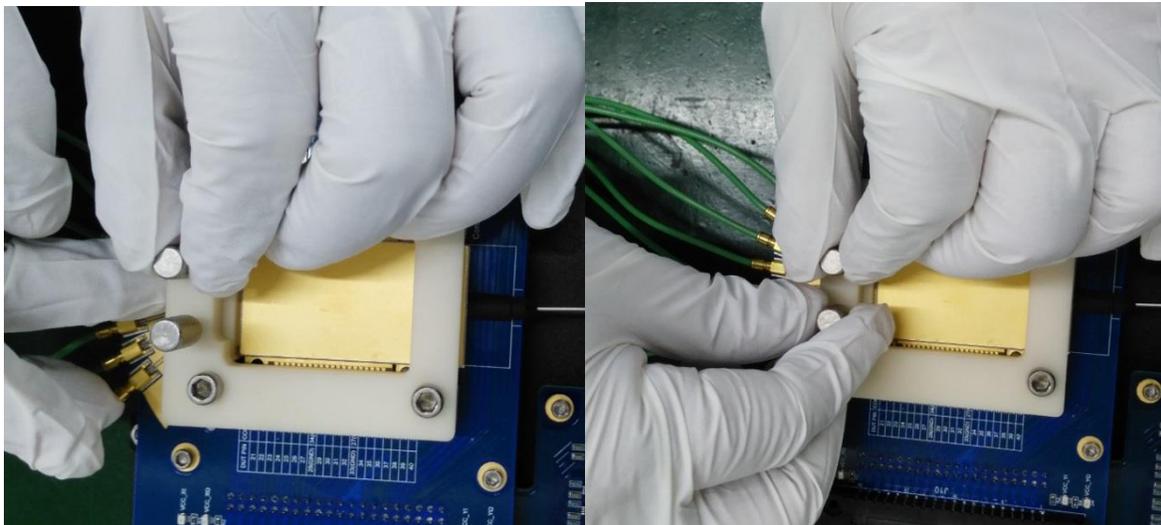


8. Put RF clamp on PCB at RF pins side, then push clamp to touch ICR side.

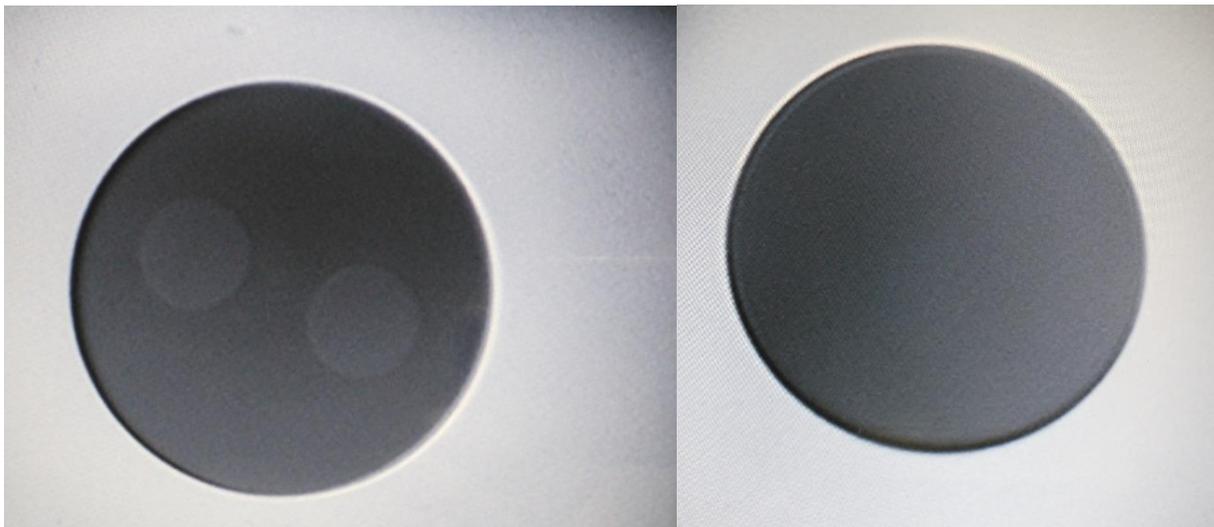
Note: Please take care that don't damage RF pins when push clamp.



9. Pre-tighten two screws one by one, after that, tighten two screws half circle at the same time.



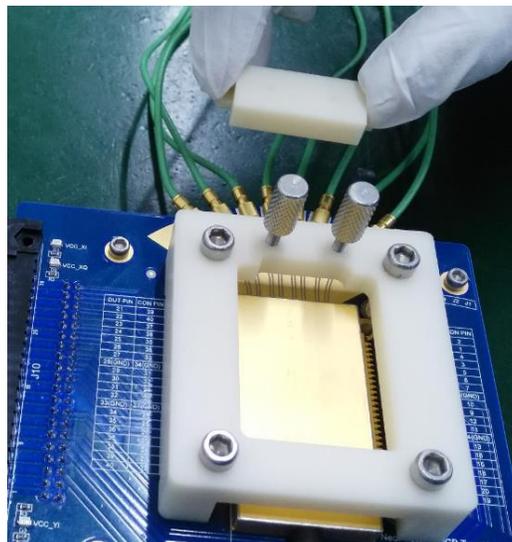
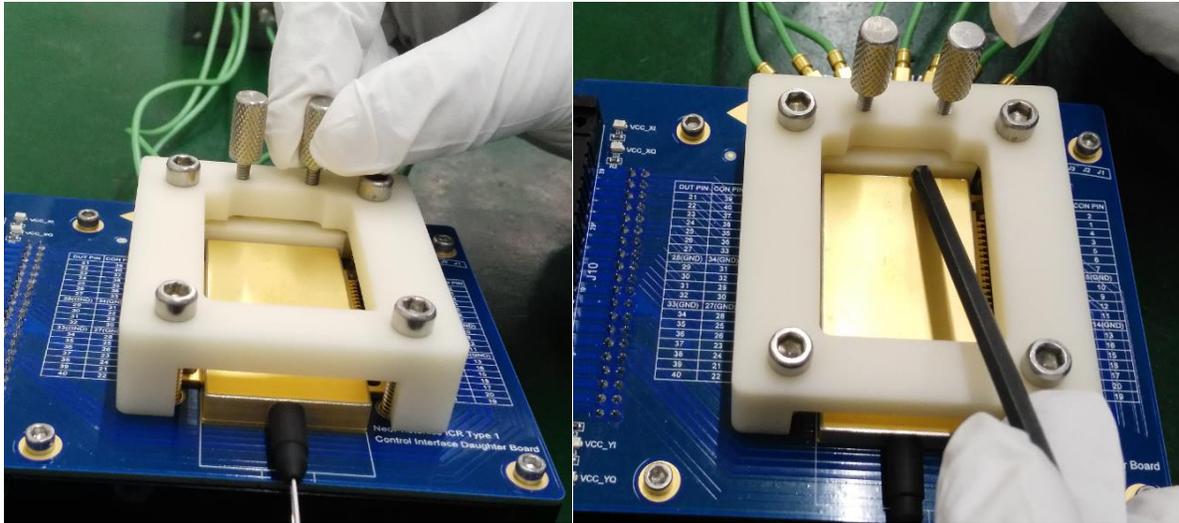
10. Fiber Connection, please make sure connectors end face are clean.



11. Checking ICR mounting is ok or not according to reading PD/TIA current before testing.

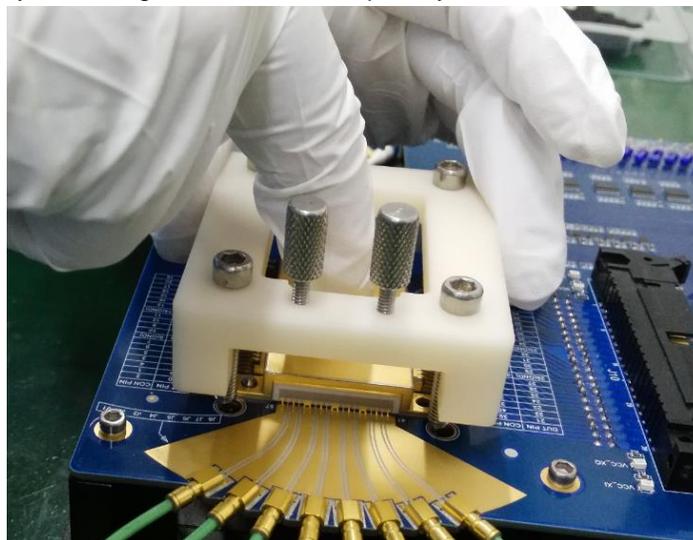
### Un-mounting ICR from Daughter Board

1. Loose two RF clamp screws. Then push out and take away RF clamp lightly.



2. Loose 4 screws and take the clamp away.

Note: please press ICR by index finger when take clamp away.



3. Taking the ICR away and put it into packing box.

