



BDE-RFM208-IN Multi-Band Wireless Module User Guide

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BDE-RFM208-IN Multi-Band Wireless Module



Introduction

This user guide is for BDE-RFM208-IN, a Wireless Module based on TI CC1352R. It is a quick start guide for how to connect the module with the evaluation board BDE-EVB07 or with the TI launchpad, and how to build the first application. It also shows a demo for how BDE-RFM208-IN receives a data packet that is sent from another BDE-RFM208-IN.

Get Ready

The following tools are recommended to develop with BDE-RFM208-IN.

Hardware tools:

- Two modules of BDE-RFM208-IN (BDE-RFM208-IN-BDE Technology Inc. (bdecomm.com))
- Two BDE-ADP208 V1.0 (adaptor board)
- PC or Laptop
- Two BDE-EVB07 (BDE-EVB07-BDE Technology Inc. (bdecomm.com))
- or
- Two TI Launchpad (LAUNCHXL-CC13X2R1 Evaluation board | TI.com)
- USB cable for power supply and debugging

Software tools:

- Terminal software such as CCS, IAR.
- CCS download
- Software Development Kit (SDK)

Build Your First Application

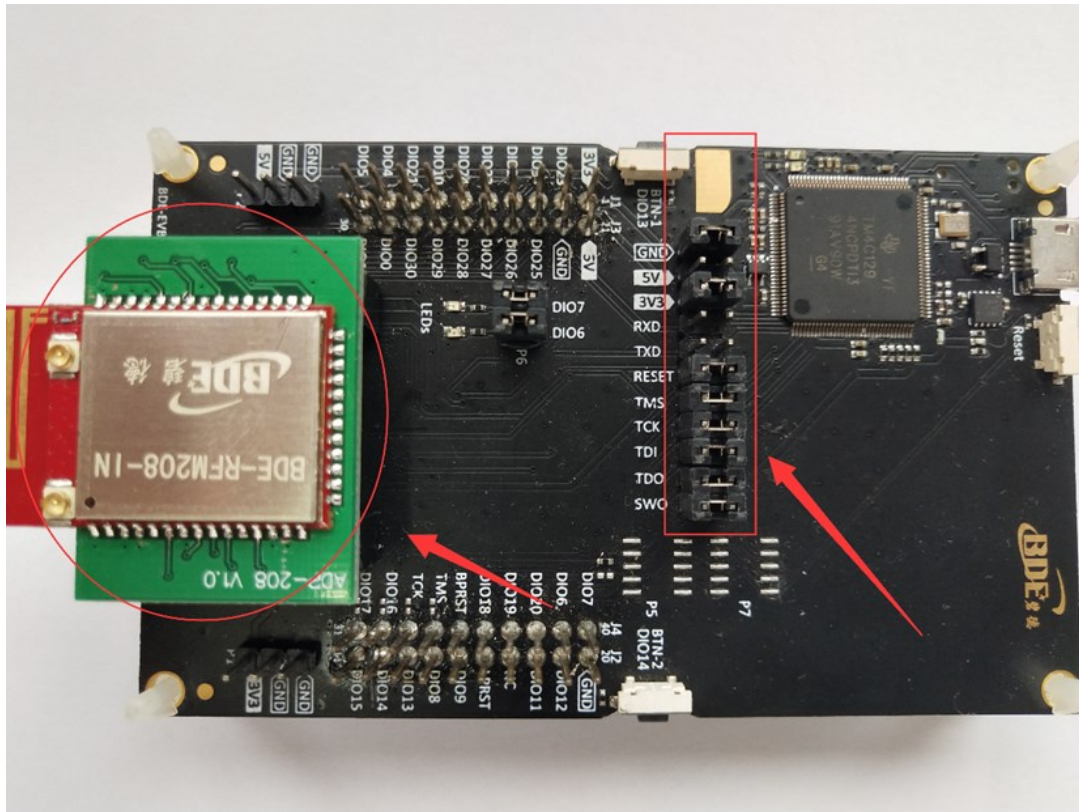
Once have the Hardware and Software tools in place, please following the following steps:

Connect the Hardware

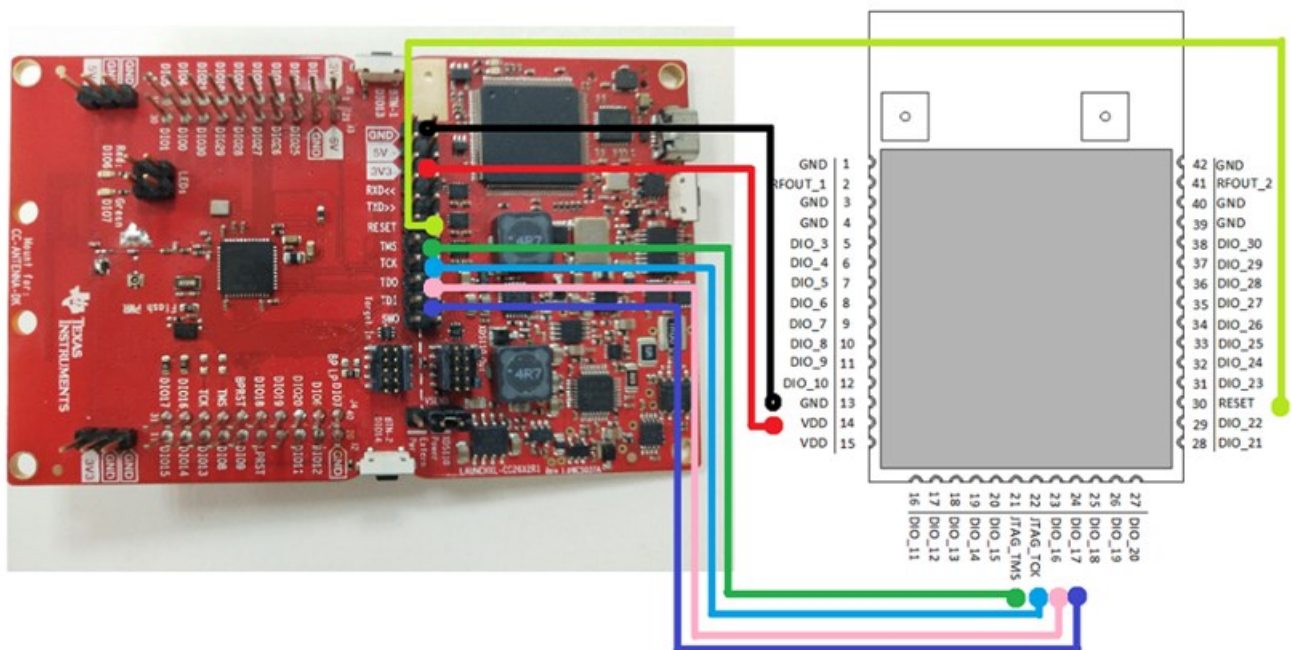
If chose EVB07: Use USB cable to connect EVB07 and PC or laptop. Plug BDE-RFM208-IN with the adaptor

board into the dev board and connect all the pins with Jumpers as the following picture shows.

Multi-Band Wireless Module



If chose TI Launchpad: The connection is as follows.



Connection Designator	BDE-RFM208-IN	LaunchPad Pin
3V3 Power	VDD	3V3
Ground	GND	GND
RST	RST	RESET
TMS	TMS	TMS
TCK	TCK	TCK
TDO	DIO16	TDO
TDI	DIO17	TDI

Optional: TDO TDI RXD TXD

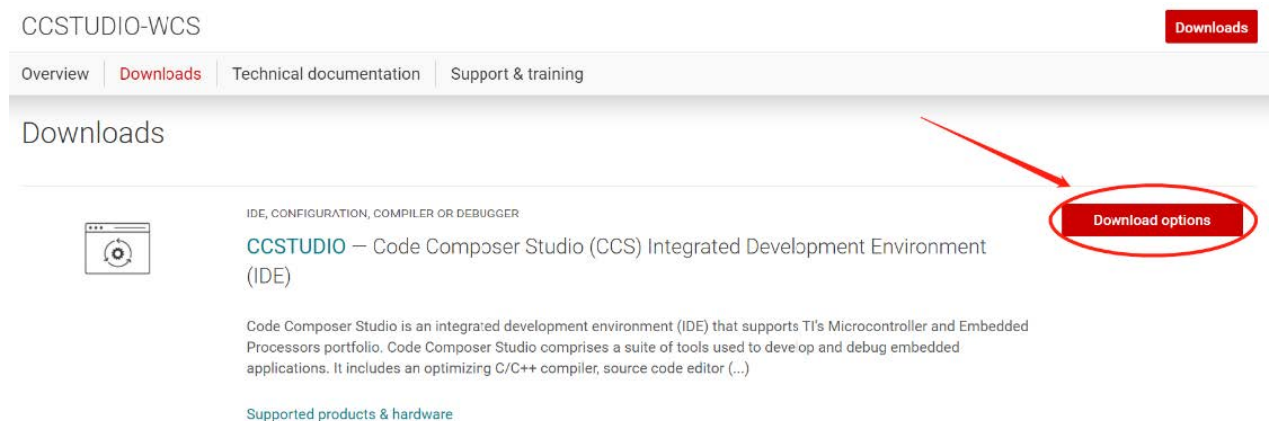
Build the Application

- **Download and install the CCS and SDK**

From the above links, follow the instructions in the following steps to download and install the CCS and SDK.

- **■ CCS Installation**

1. Click on this option



The screenshot shows the 'CCSTUDIO-WCS' website. At the top right is a red 'Downloads' button. Below it is a navigation bar with 'Overview', 'Downloads' (highlighted in red), 'Technical documentation', and 'Support & training'. The main heading is 'Downloads'. Below this, there is a section for 'CCSTUDIO — Code Composer Studio (CCS) Integrated Development Environment (IDE)'. To the left of this text is a small icon of a computer monitor with a gear. To the right, there is a red button labeled 'Download options' which is circled in red. A red arrow points from the 'Downloads' section heading to this button. Below the main heading, there is a paragraph of text describing Code Composer Studio as an integrated development environment (IDE) that supports TI's Microcontroller and Embedded Processors portfolio. It includes an optimizing C/C++ compiler, source code editor, and more. At the bottom, there is a link for 'Supported products & hardware'.

2. Select an option to download CCS

Download options



Code Composer Studio (CCS) Integrated Development Environment (IDE)

Version: 10.3.0.00007

Release date: 05 Apr 2021

SINGLE FILE INSTALLERS

↓ [Windows single file installer for CCS IDE \(1181753652 KB\)](#)

↓ [Linux single file installer for CCS IDE \(1102001729 KB\)](#)

↓ [macOS single file installer for CCS IDE \(1083552986 KB\)](#)

ON-DEMAND INSTALLERS

↓ [Windows on-demand installer for CCS IDE \(40136960 KB\)](#)

↓ [Linux on-demand installer for CCS IDE \(25338386 KB\)](#)

↓ [macOS on-demand installer for CCS IDE \(24595266 KB\)](#)

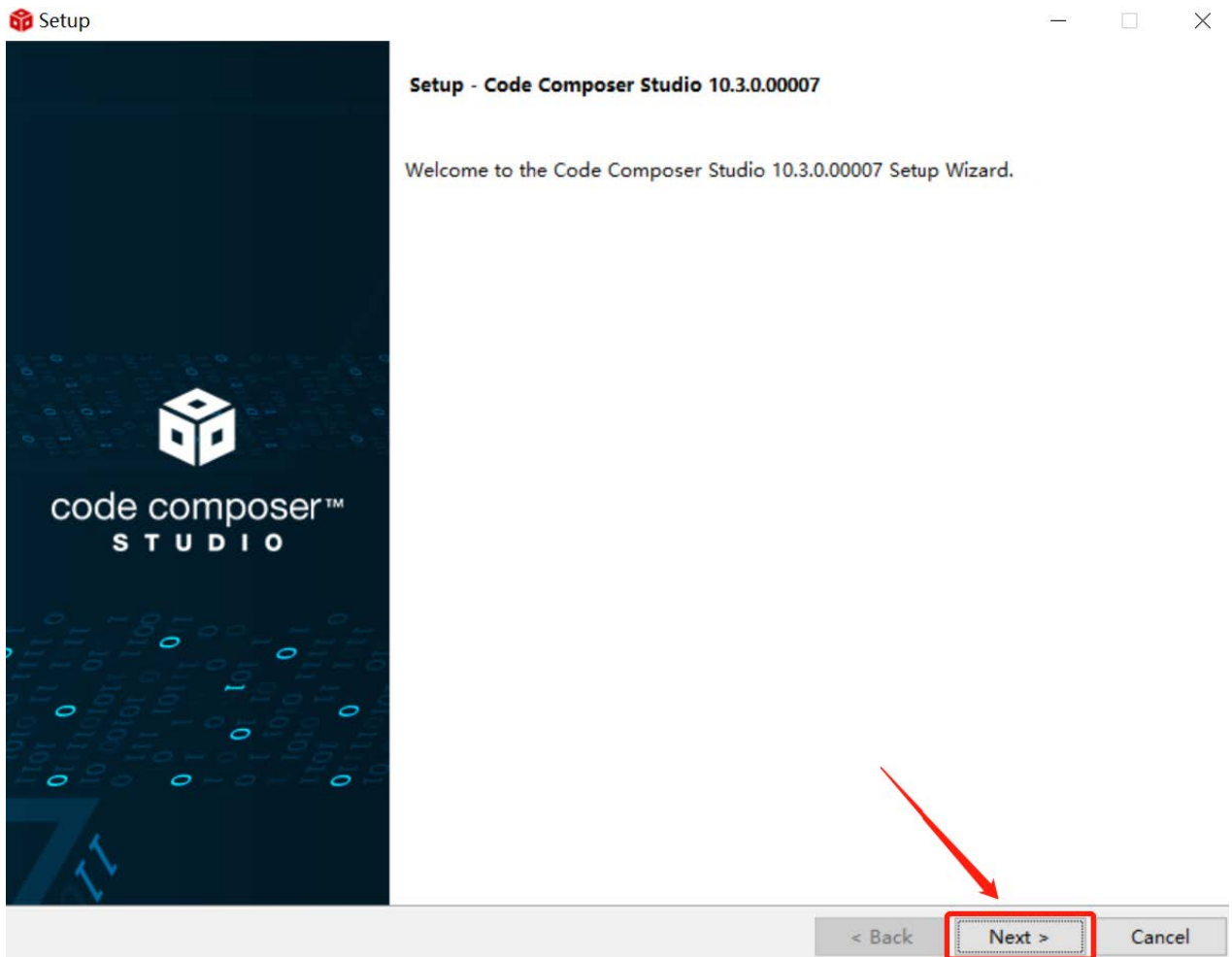
3. Unzip the package to a local disc

	CCS10.3.0.00007_win64.zip	2021/4/19 11:11	WinRAR ZIP
	CCS10.3.0.00007_win64	2021/4/20 11:36	文件夹

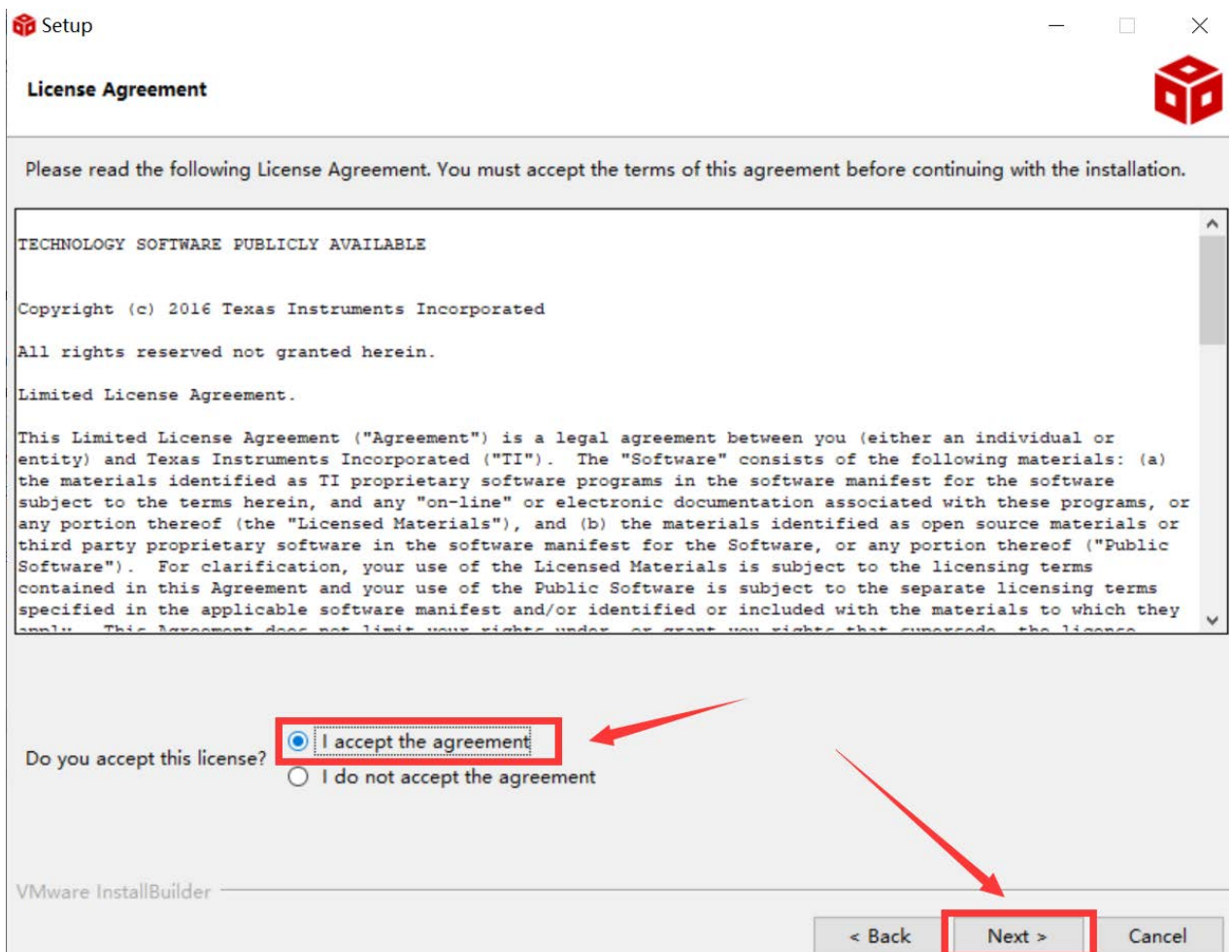
4. Click the setup of CCS

	binary	2021/3/29 21:38
	CCS10.3.0.00007_win64	2021/4/19 11:23
	components	2021/3/29 21:38
	features	2021/3/29 21:38
	artifacts.jar	2021/3/29 21:38
	ccs_setup_10.3.0.00007.exe	2021/3/29 21:37
	content.jar	2021/3/29 21:38
	README_FIRST_win64.txt	2021/3/29 21:38
	timestamp.txt	2021/3/29 21:38

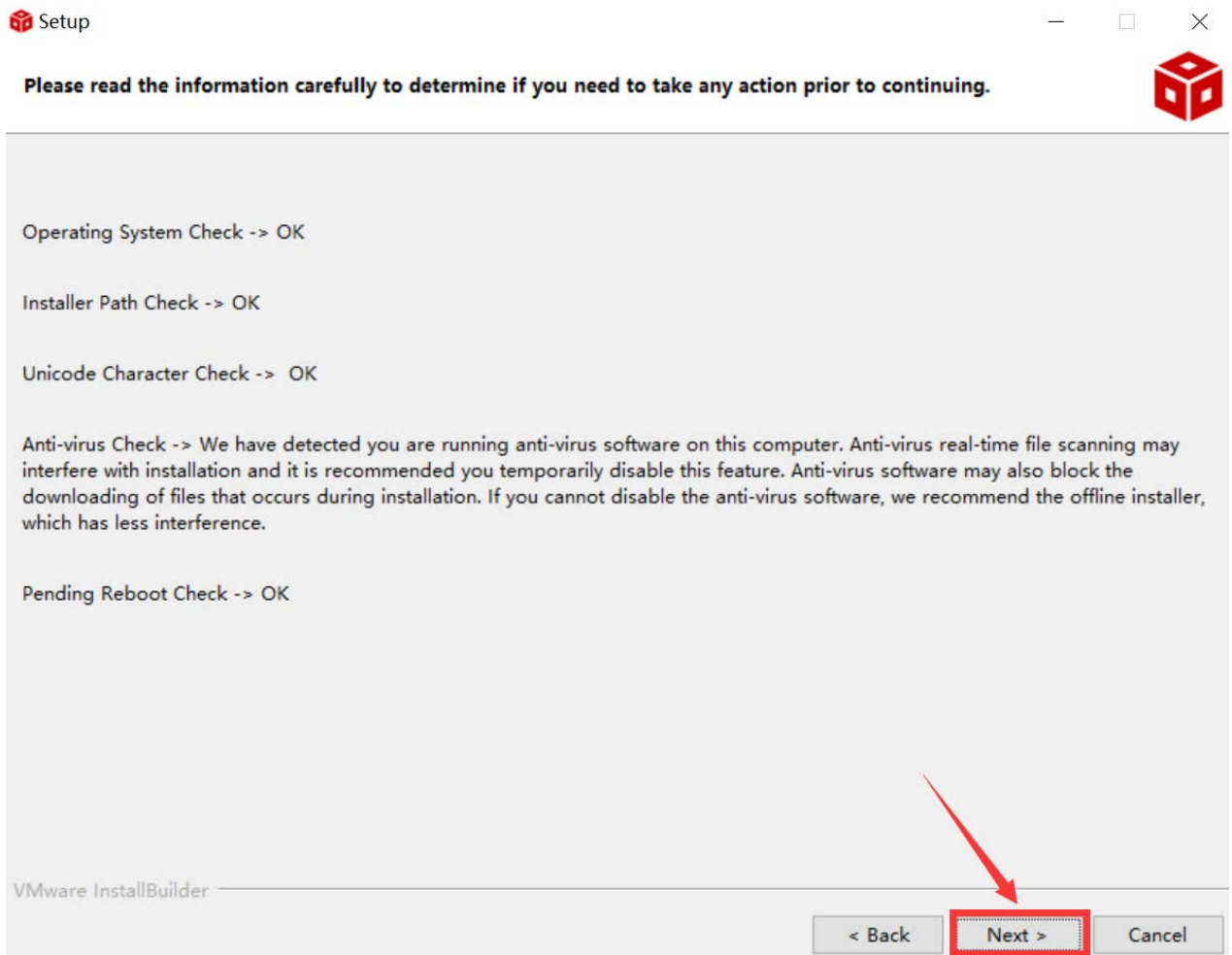
5. Click "Next"



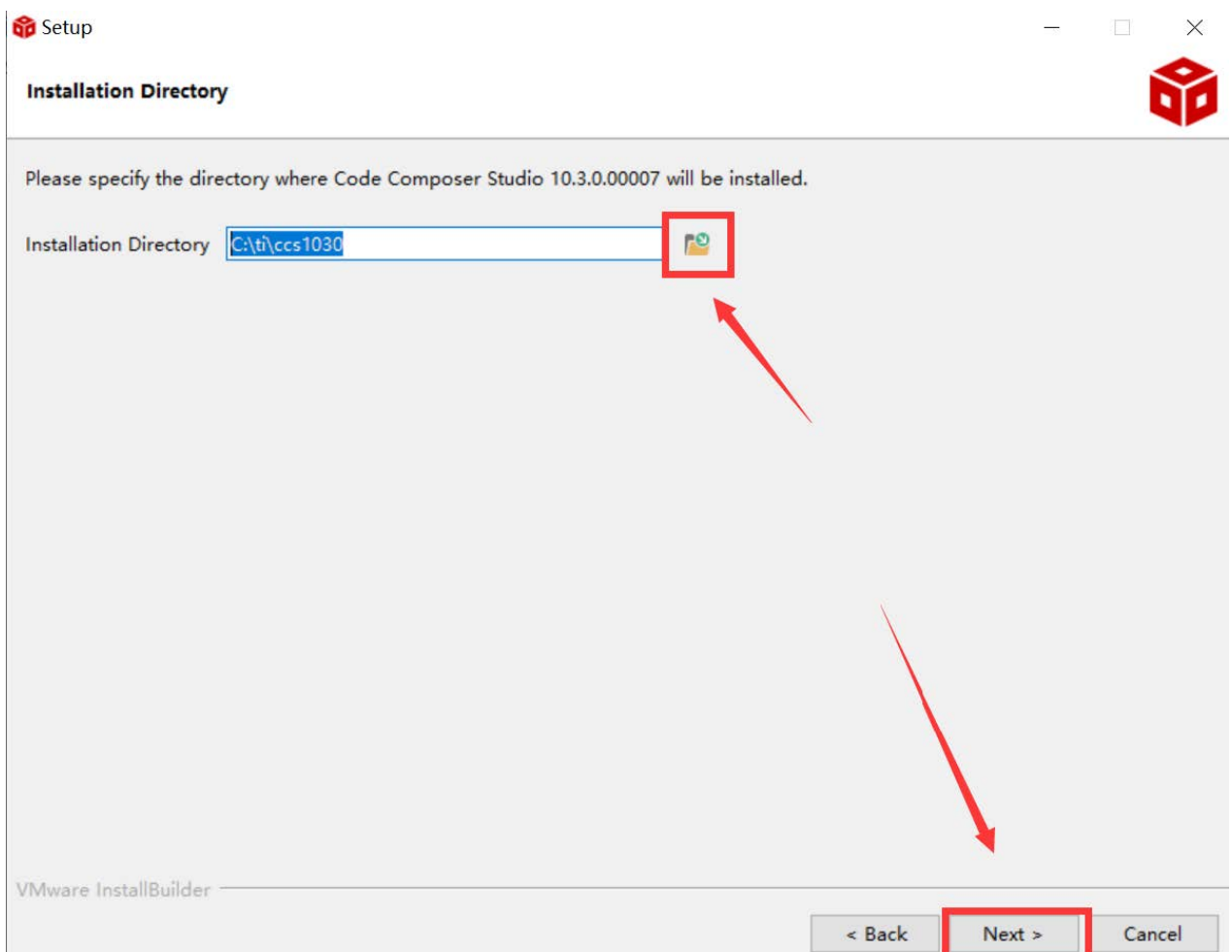
6. Select the default option



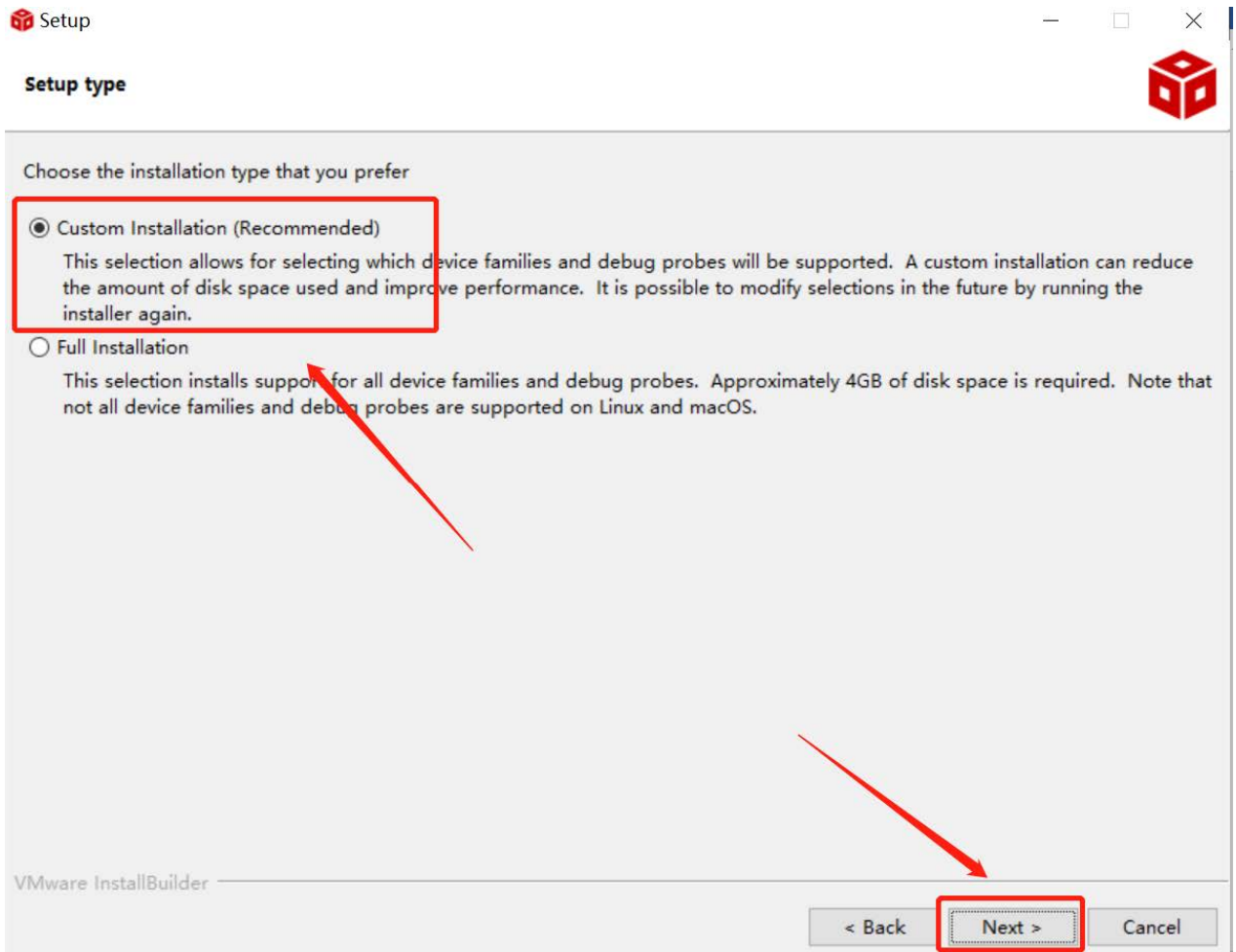
7. Click "Next"



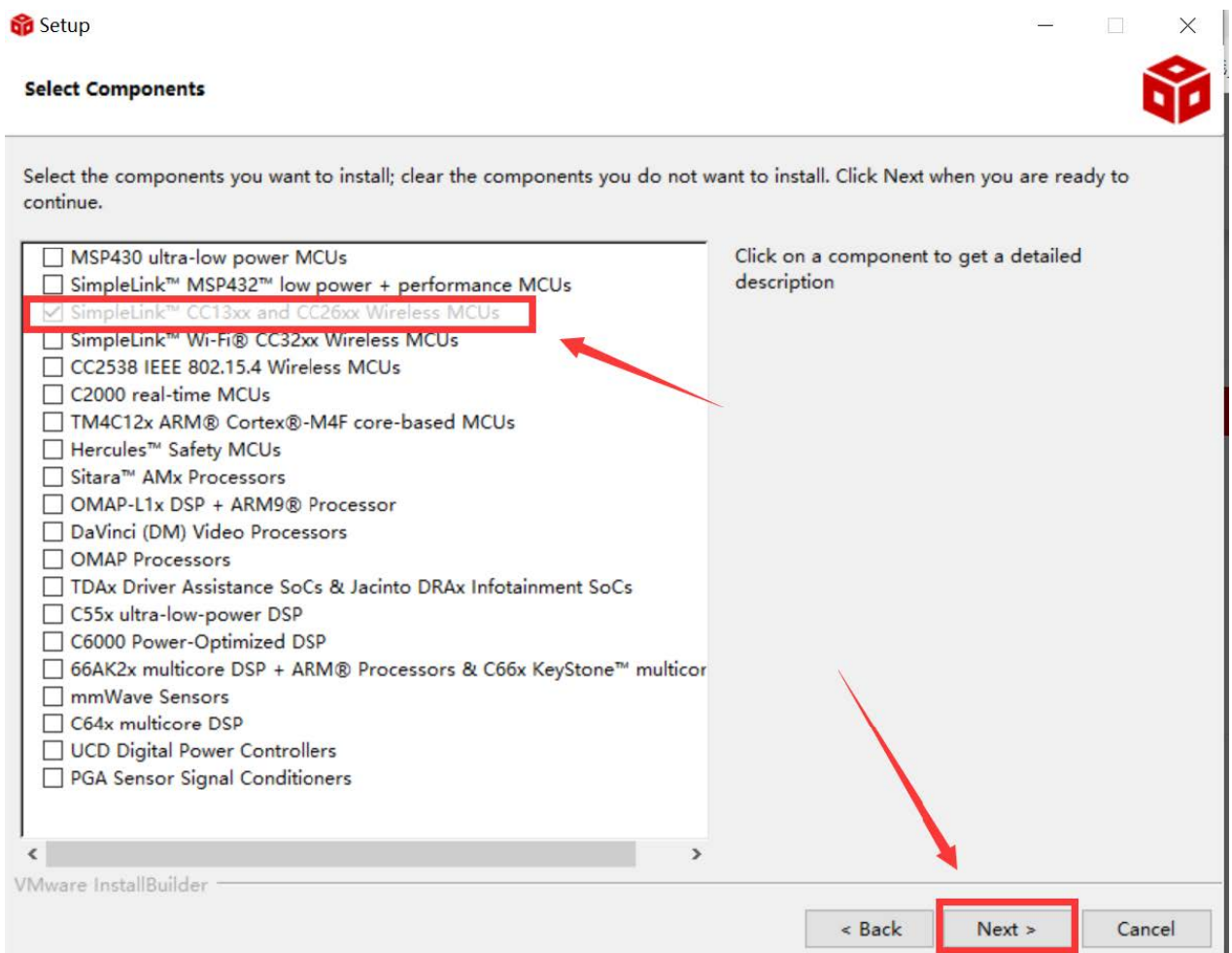
8. Select the Installation Directory



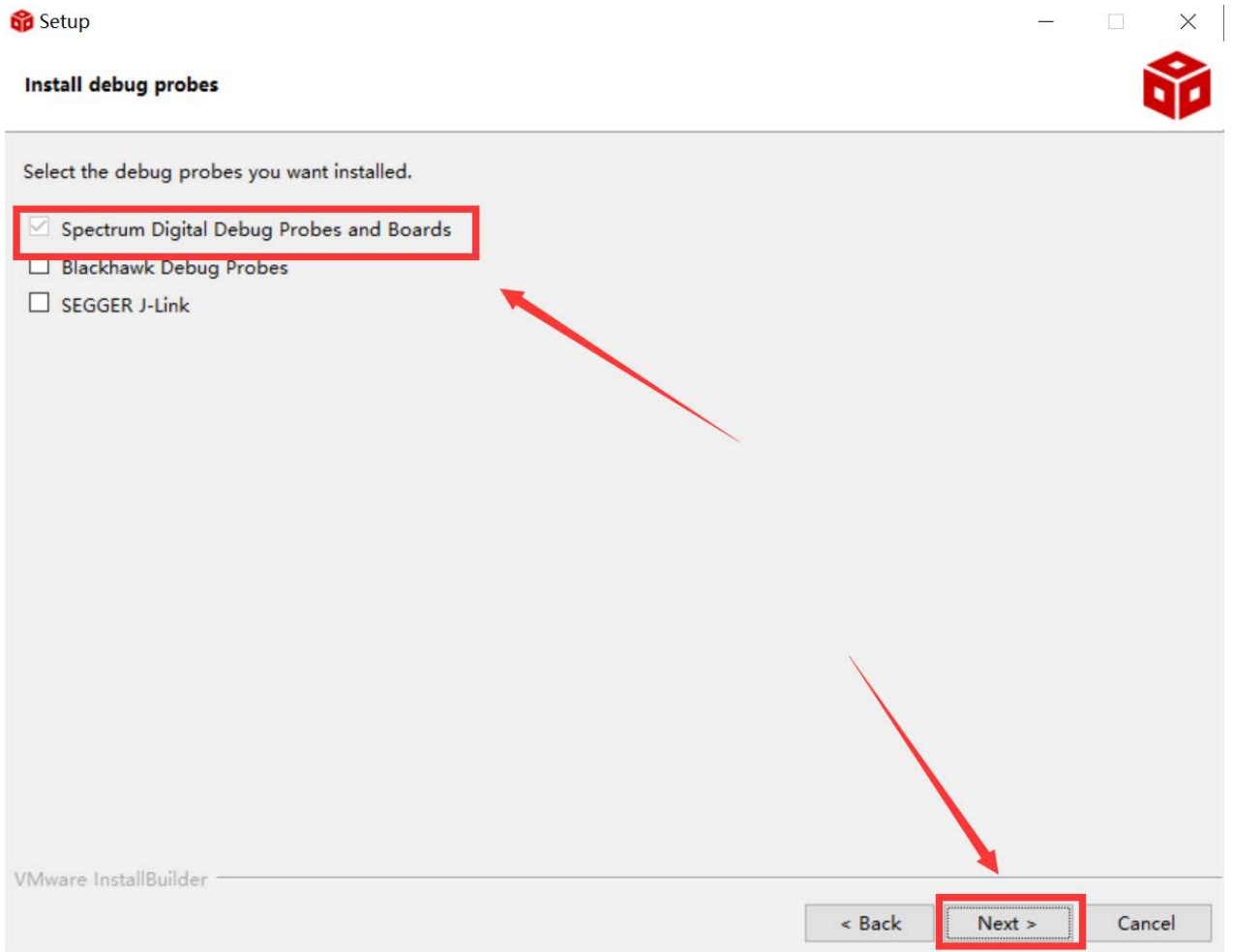
9. Select the default option



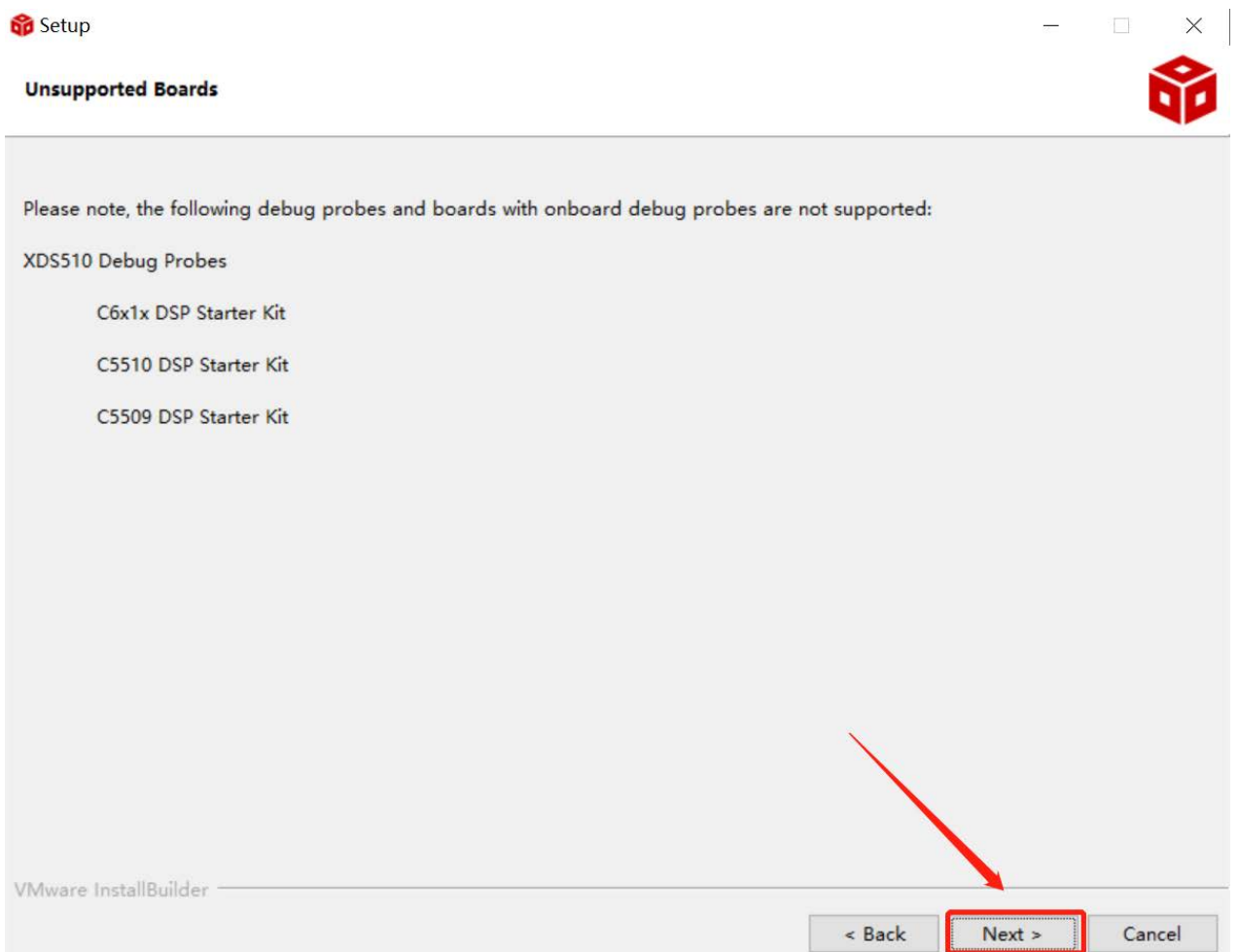
10. Select the component



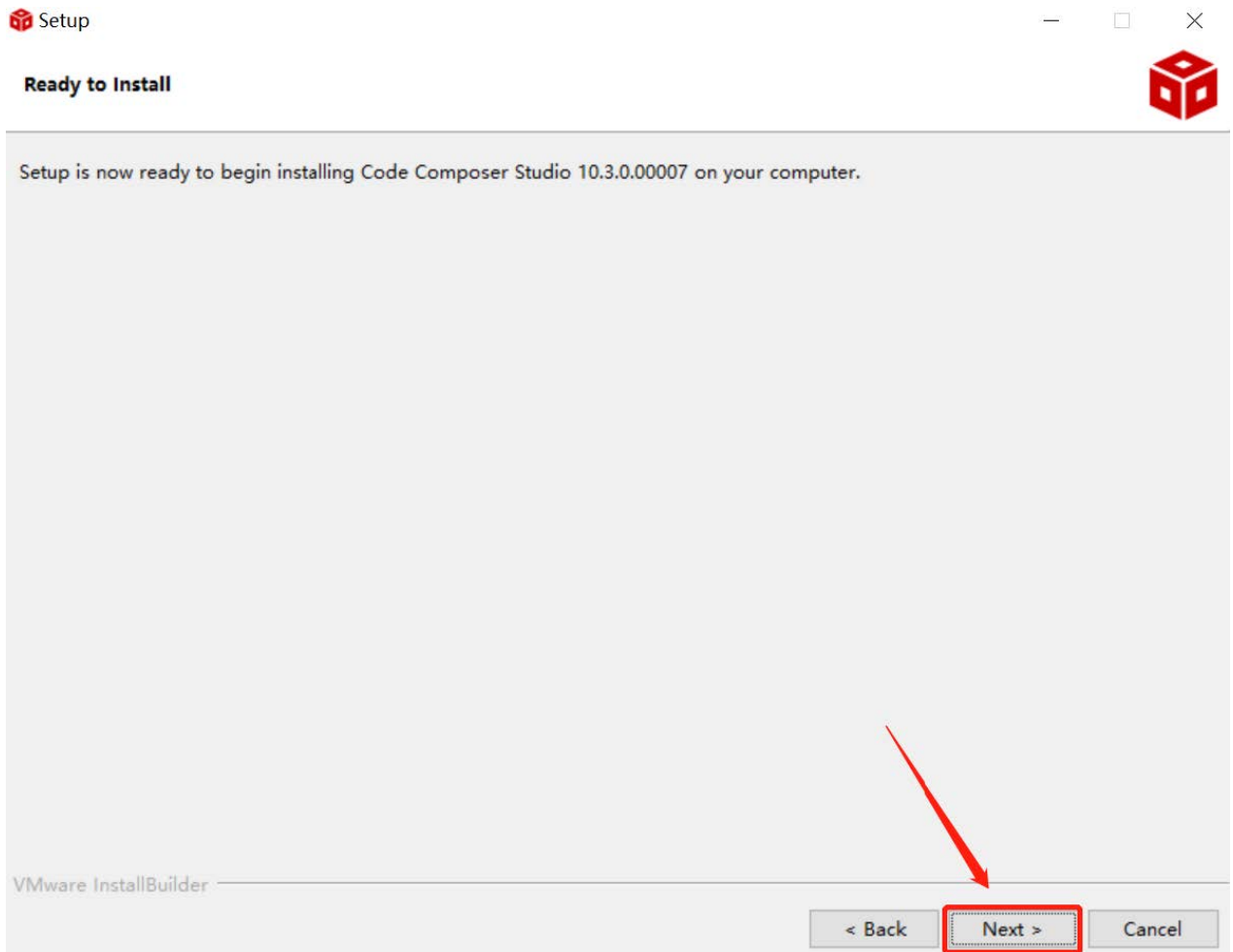
11. Select the default option



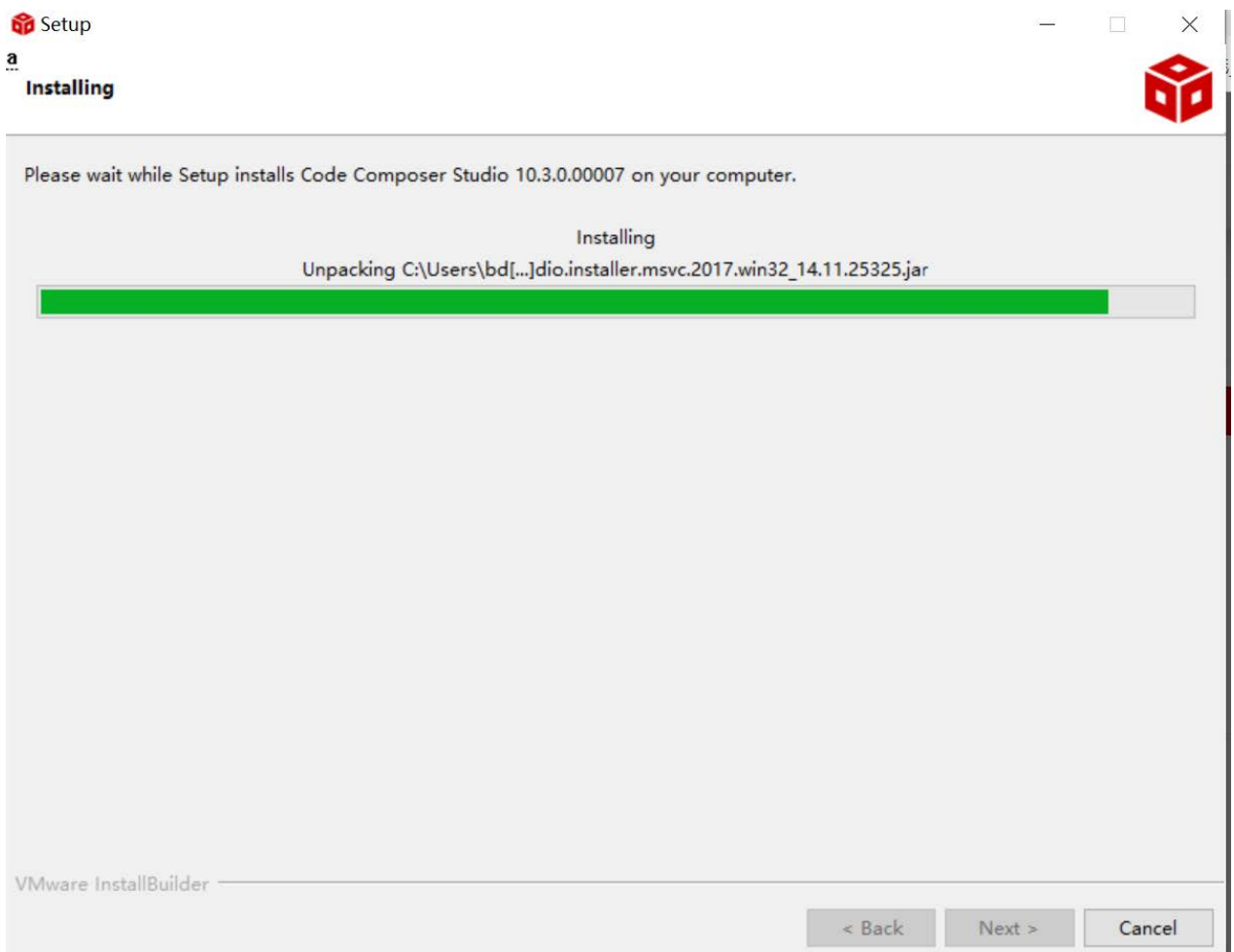
12. Click "Next"



13. Click "Next"



14. Waiting for installation to complete




1. Click on this option

SIMPLELINK-CC13X2-26X2-SDK Downloads

Overview **Downloads** Technical documentation Related design resources Support & training

Primary software Supported products & hardware




SOFTWARE DEVELOPMENT KIT (SDK)

SIMPLELINK-CC13X2-26X2-SDK – SimpleLink™ CC13x2 and CC26x2 software development kit

[Supported products & hardware](#)

Download options

[Subscribe to alerts](#)



SOFTWARE DEVELOPMENT KIT (SDK)

SIMPLELINK-CC13X2-26X2-SDK-CLOUD – SimpleLink™ CC13x2 and CC26x2 software development kit cloud development on TI Resource Explorer

Start evaluation

2. Select an option you need to download SDK

Download options



SOFTWARE DEVELOPMENT KIT (SDK)

SIMPLELINK-CC13X2-26X2-SDK

SimpleLink™ CC13x2 and CC26x2 software development kit

Version: 5.10.00.48

Release date: 14 Apr 2021

SIMPLELINK SDK INSTALLERS

 **Windows Installer for Simplelink CC13X2 26X2 SDK (839629528 KB)**

 **Mac OS Installer for SimpleLink CC13X2 26X2 SDK (896984089 KB)**

 **Linux Installer for SimpleLink CC13X2 26X2 SDK (824512748 KB)**

EXPLORE IN THE CLOUD

3. Log in to your TI account, if you are a new user, register a TI account first

myTI account

[myTI FAQ](#)

Existing myTI user?

Your email address

Your myTI password



Remember me

[Forgot your password?](#)

By logging in, you agree to
[TI's Terms of use](#) & [Privacy policy](#).

4. Select "civil" if your application is for civil use

U.S. Government export approval:

All fields are Required. Incomplete information will be DENIED.

First name:

Last name:

Your email address:

Your full company/university name:

Country this file will be used in:

What end-equipment/application will you use this file for:

☐ Military

☒ Civil

I certify that the following is true:

5. Select "Yes" and submit

compliance with any such import, use, or export restrictions.

- I / We hereby certify that we will adhere to the conditions above.
- I / We do not know of any additional facts different from the above.
- I / We take responsibility to comply with these terms.
- I / We understand we are responsible to abide by the most current. versions of the Export Administration Regulations and other U.S. export and sanctions laws.

I CERTIFY ALL THE ABOVE IS TRUE:

Yes ☒ No ☐

Submit

Thank you,
Texas Instruments

6. Download SDK

TI Request

You have been approved to receive this file.
Click "Download" to proceed.

In a few moments, you will also receive an email with the link to this file.

Download

Having trouble downloading? Try www.ti.com/software-help

Thank you,
Texas Instruments

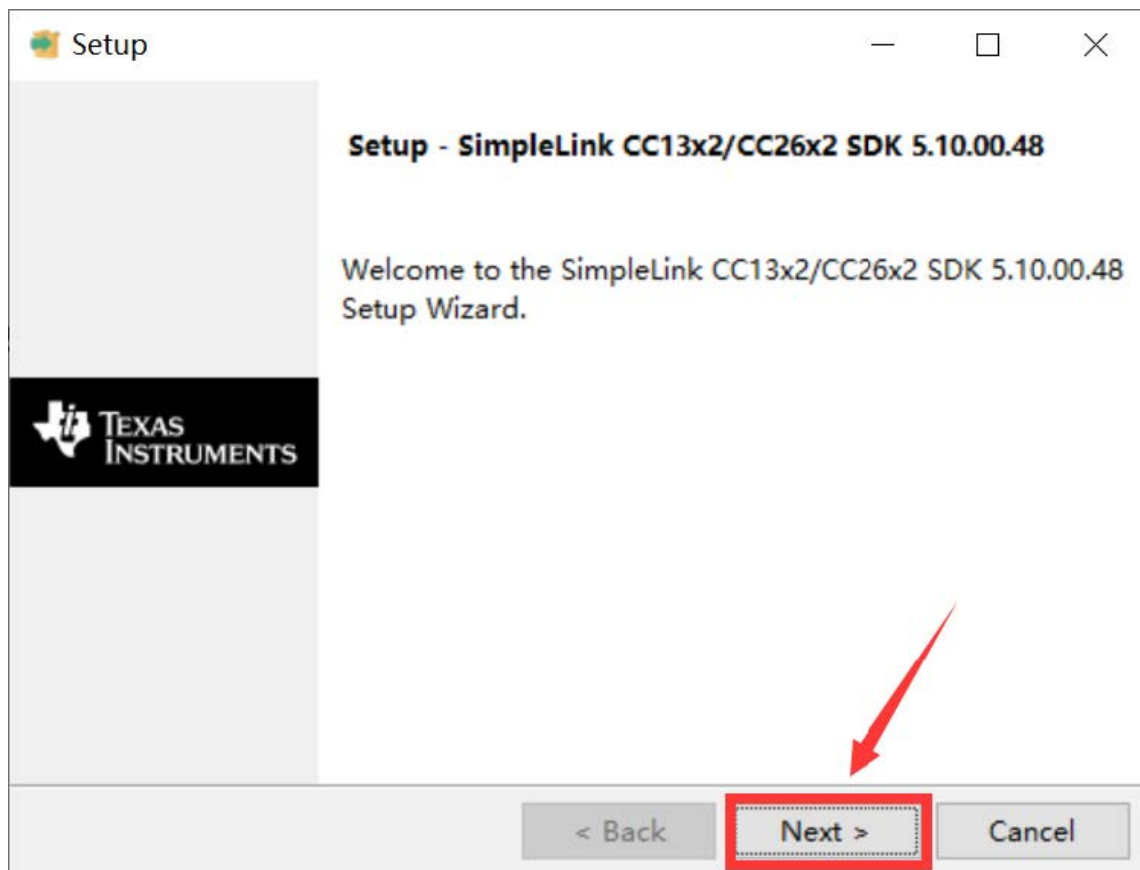
7. Installation



simplelink_cc13x2_26x2_sdk_5_10_00_48.exe

2021/4/19 15:11

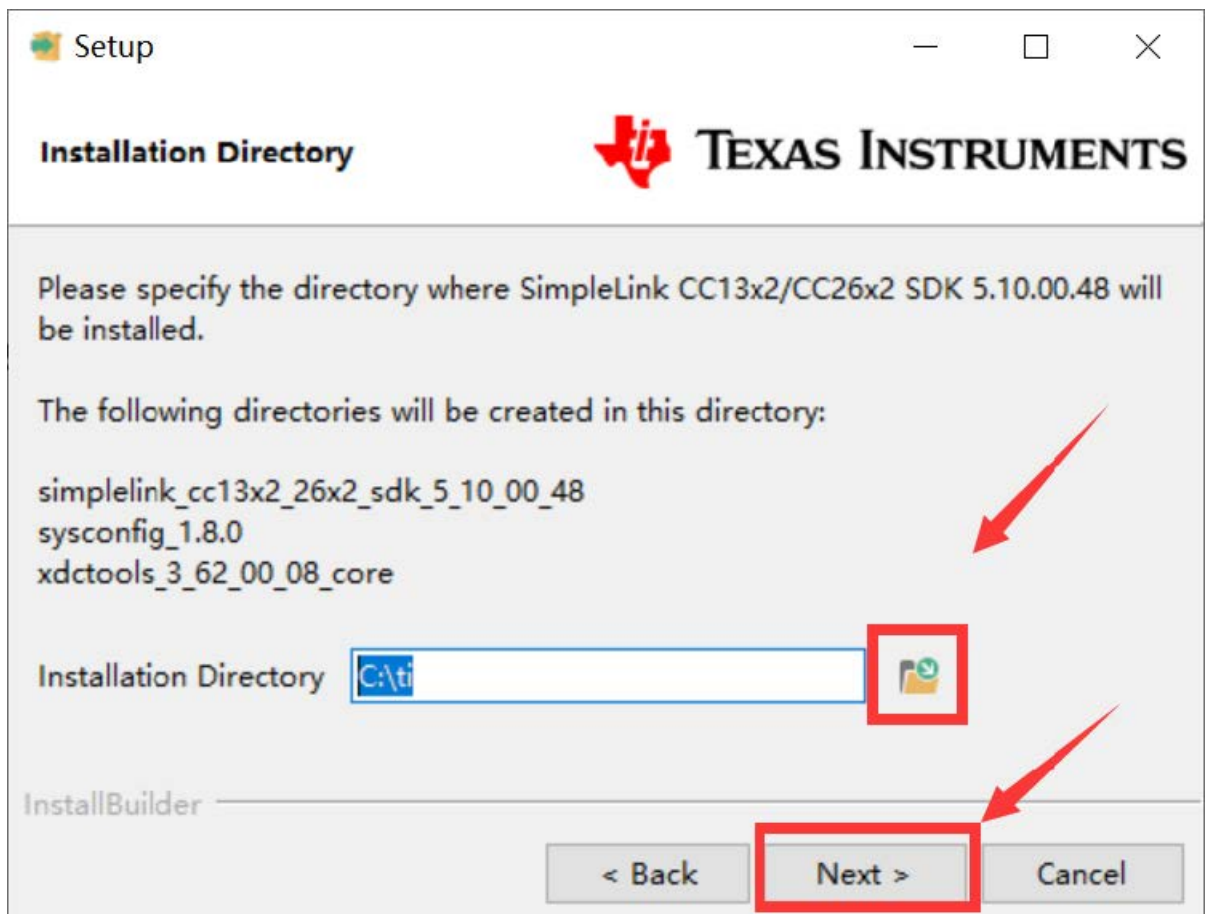
8. Click "Next"



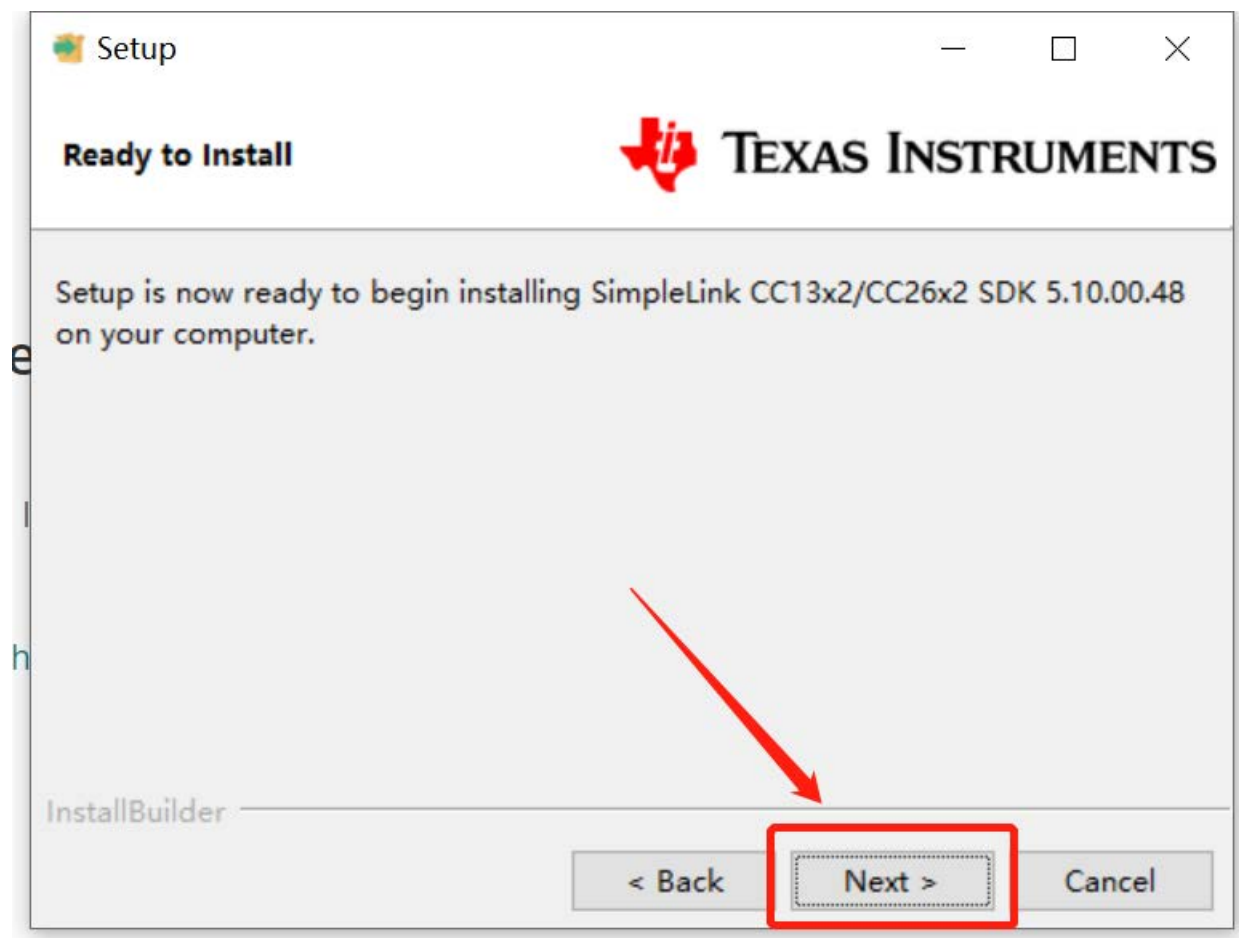
9. Select the default option



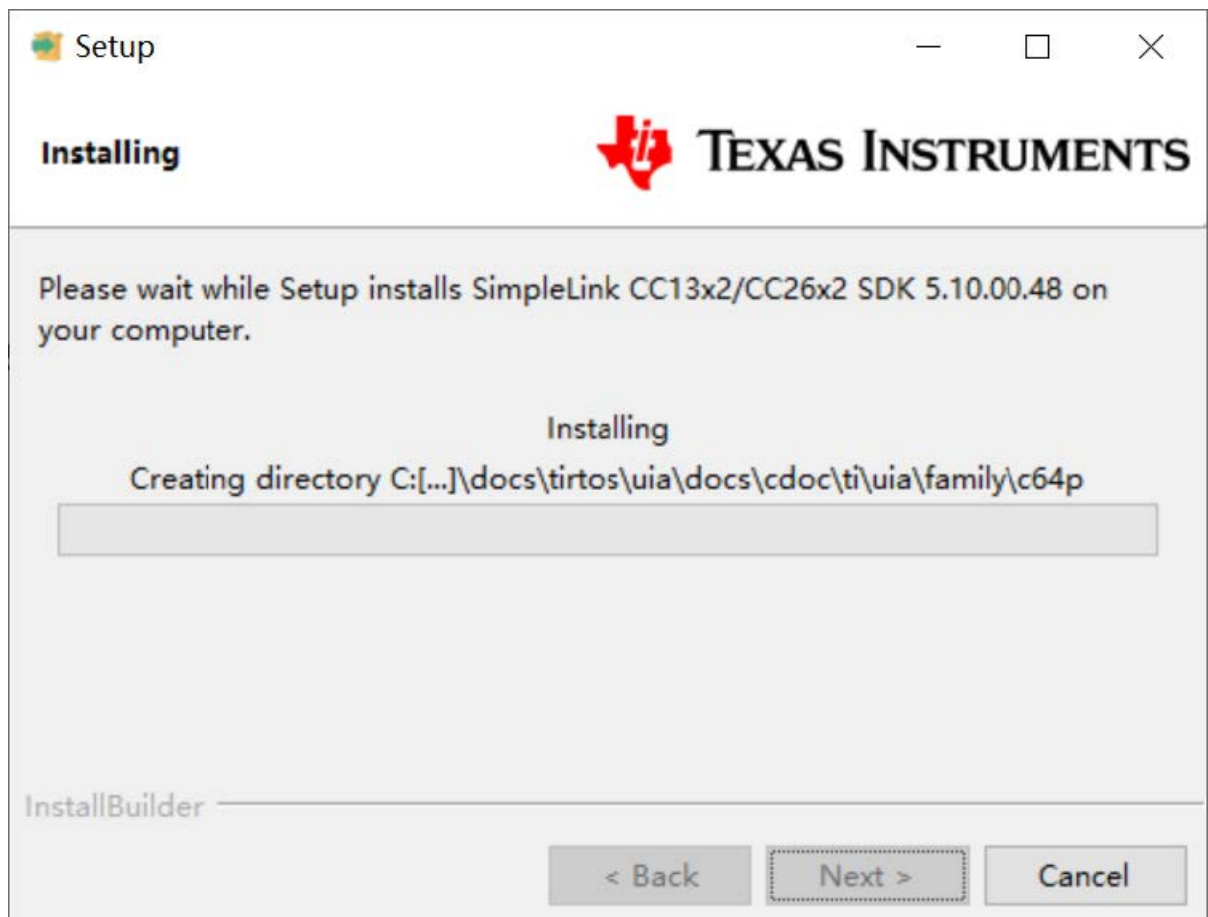
10. Select the Installation directory



11. Click "Next"

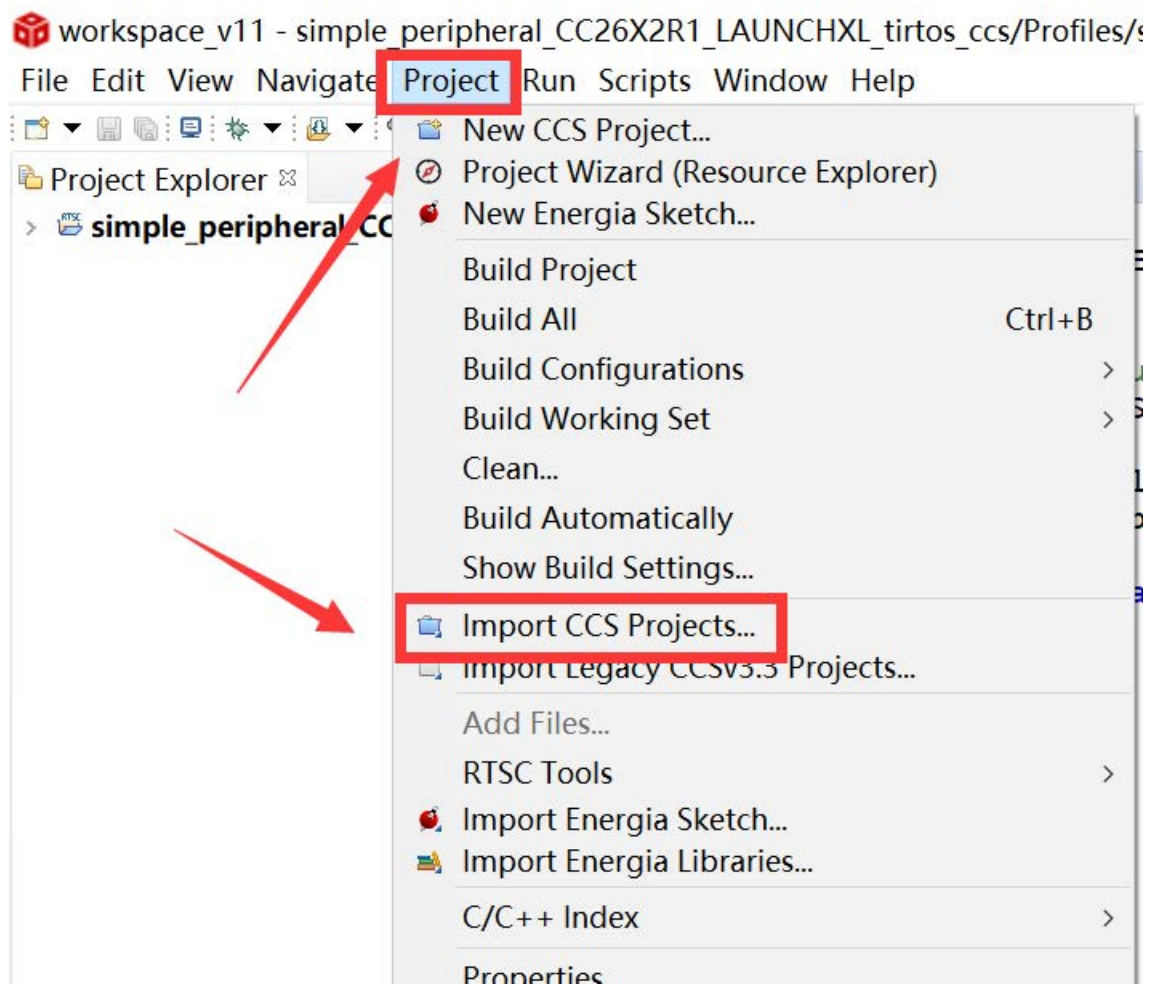


12. Waiting for installation to complete



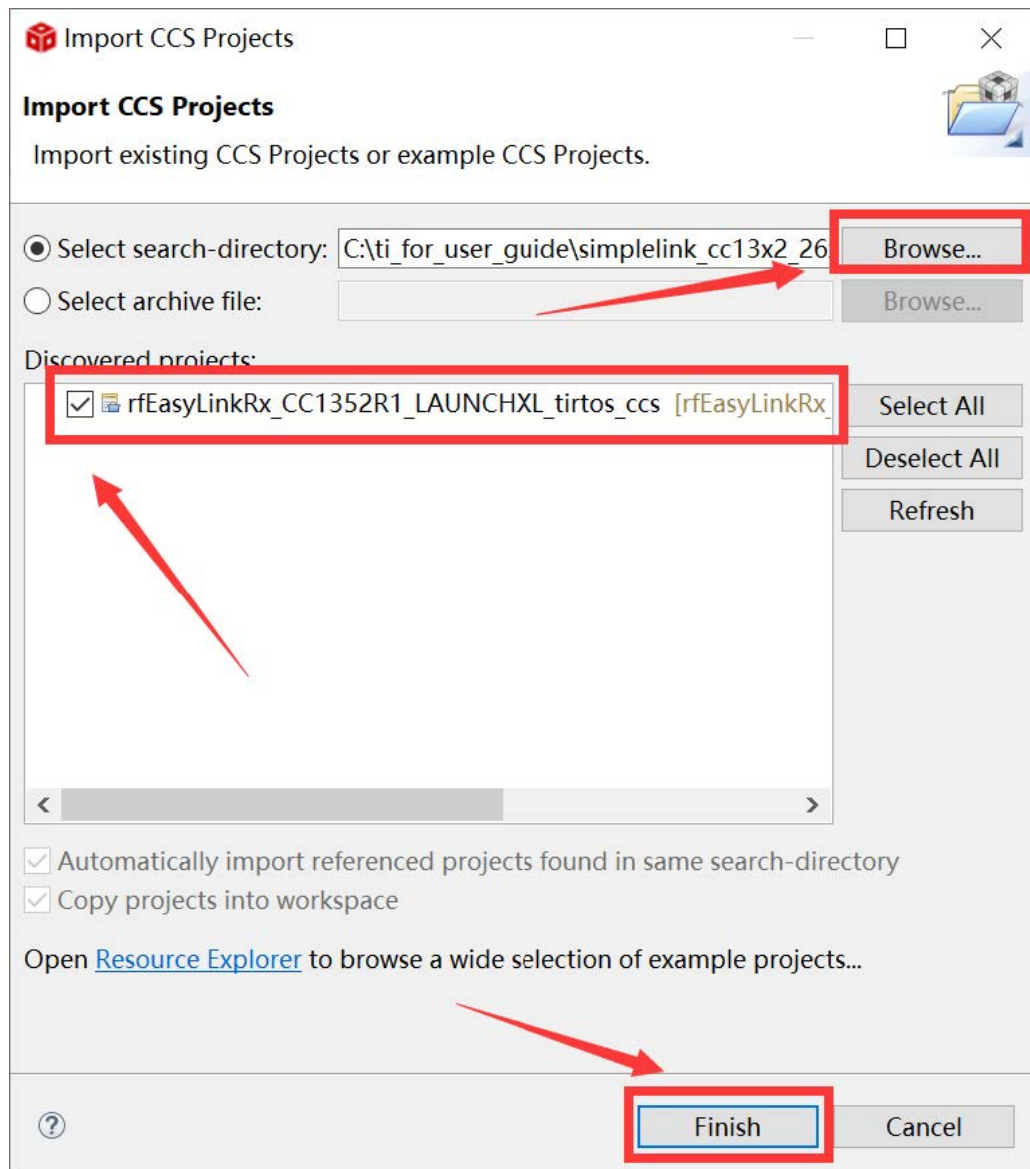
Run an example/demo code

1. For the first module, find the option named "Import CCS project..."

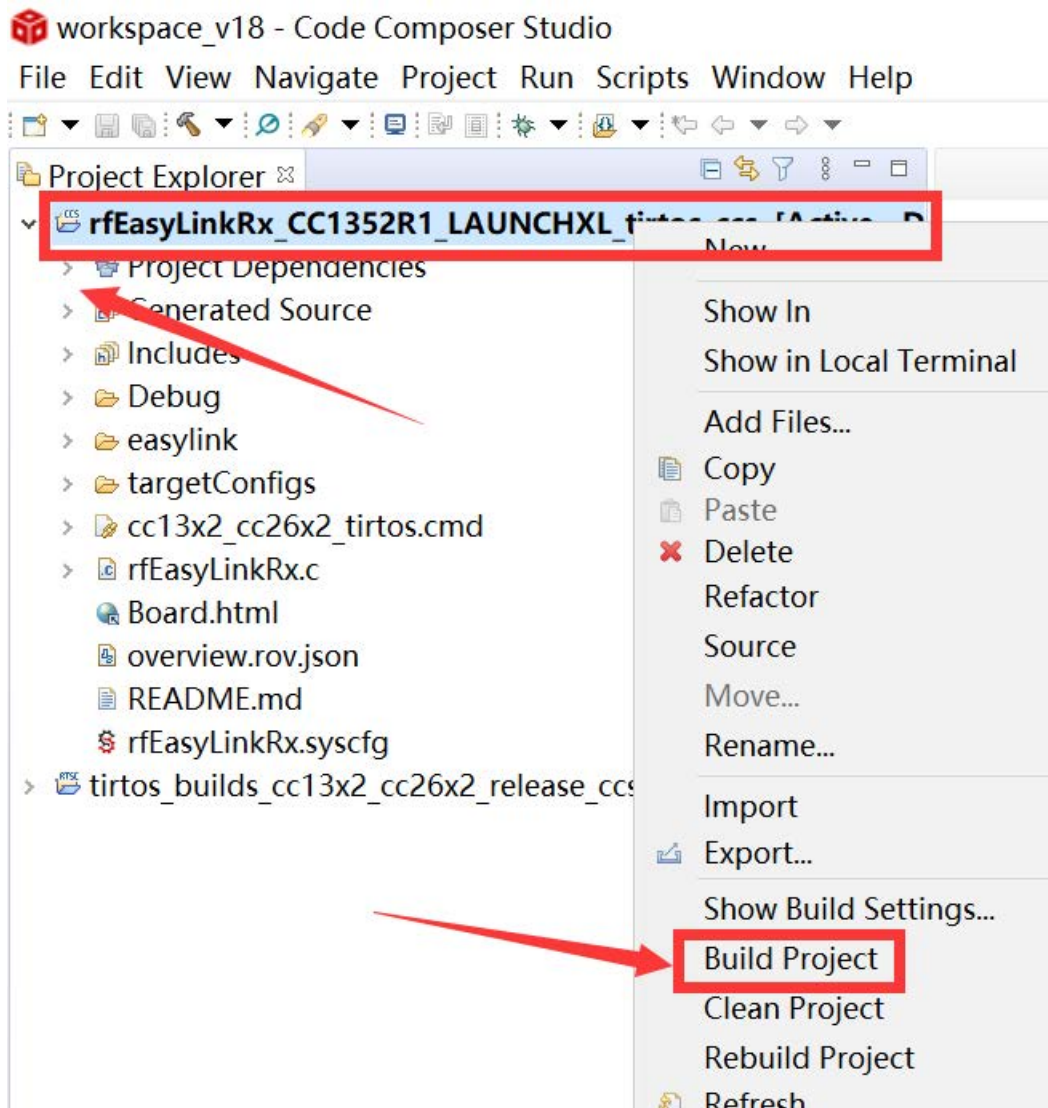


2. According to the following path to find the sending end project:

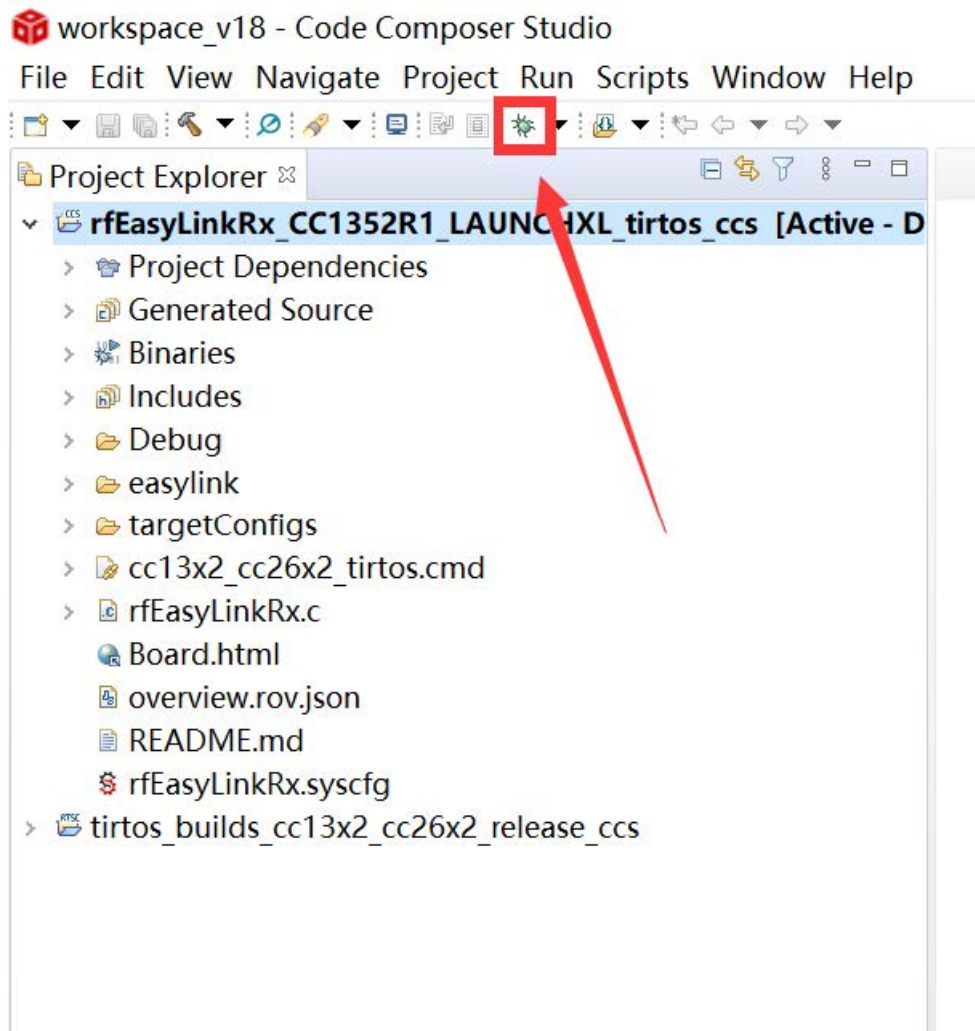
ti\simplelink_cc13x2_26x2_sdk_5_10_00_48\examples\rtos\CC1352R1_LAUNCHXL\ easylink\
rfEasyLinkRx\tirtos\ccs



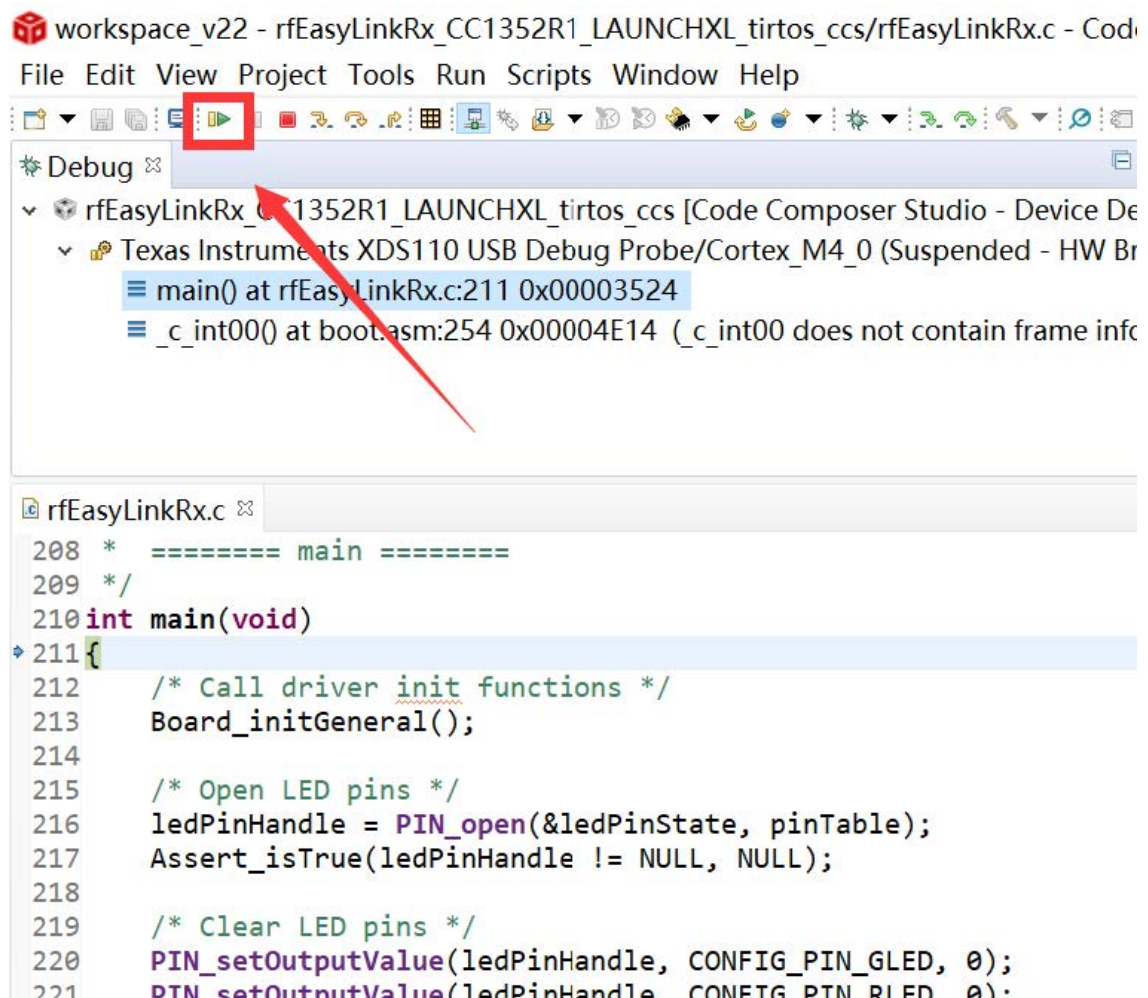
3. Right Click the project to build the receiving end project



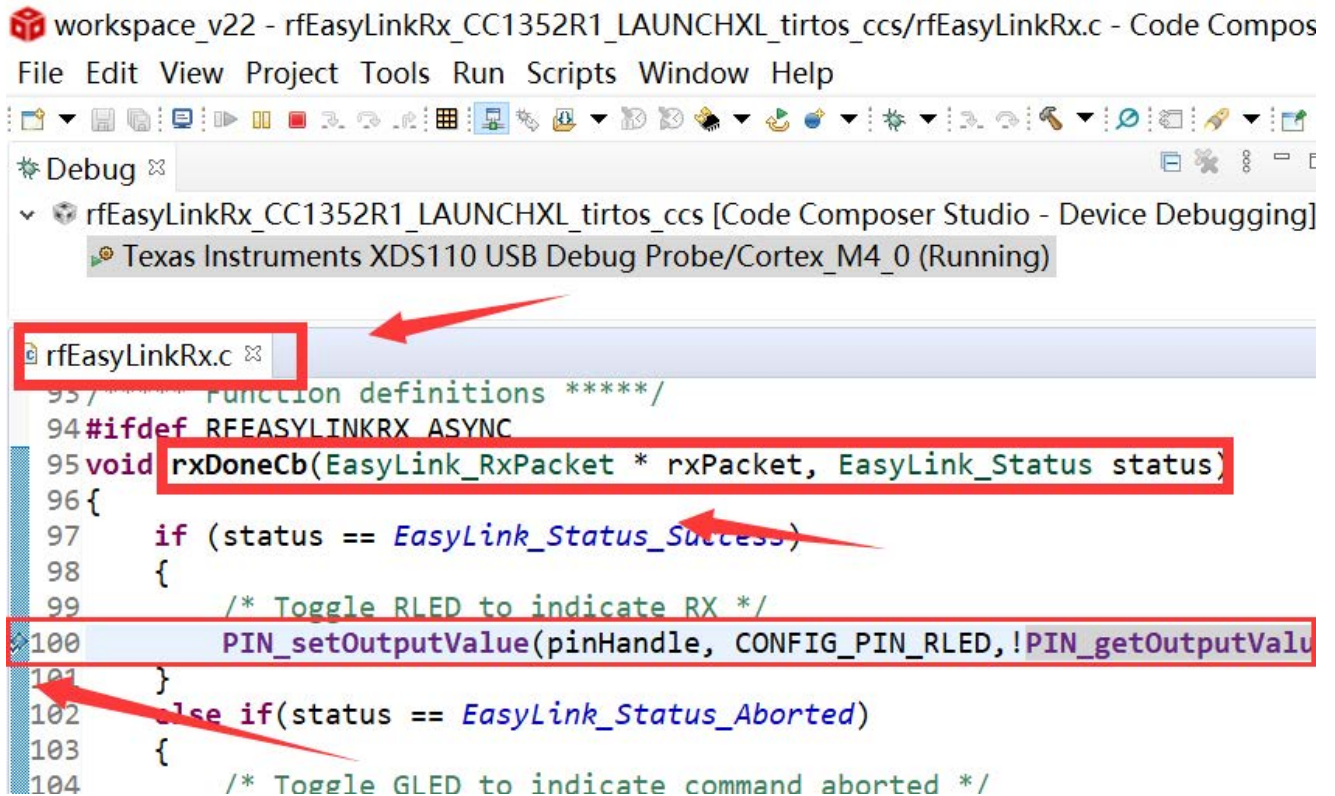
4. Click this bug icon (means download and debugging)



5. Click on this option to start debugging



6. Find the file which is named “rfEasyLinkRx.c” and the function which is named “rxDoneCb”, and set a breakpoint at the line as the arrows shows



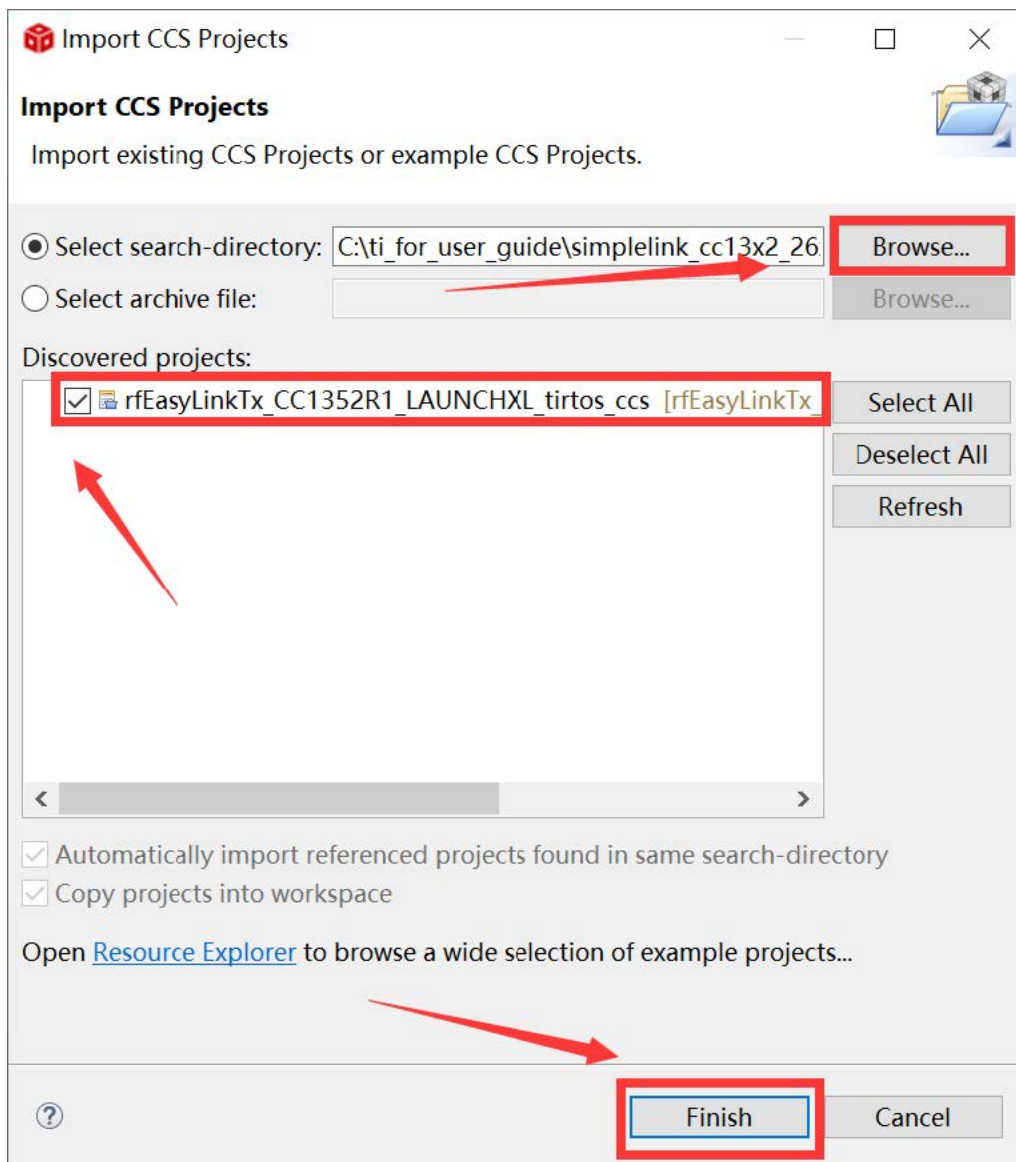
The screenshot shows the Code Composer Studio interface. The top menu bar includes File, Edit, View, Project, Tools, Run, Scripts, Window, and Help. The toolbar contains various icons for file operations and debugging. The Debug window shows the project "rfEasyLinkRx_CC1352R1_LAUNCHXL_tirtos_ccs" and the target "Texas Instruments XDS110 USB Debug Probe/Cortex_M4_0 (Running)". The file "rfEasyLinkRx.c" is open in the editor. The code is as follows:

```
93 /***** Function definitions *****/
94 #ifdef RFEASYLINKRX_ASYNC
95 void rxDoneCb(EasyLink_RxPacket * rxPacket, EasyLink_Status status)
96 {
97     if (status == EasyLink_Status_Success)
98     {
99         /* Toggle RLED to indicate RX */
100         PIN_setOutputValue(pinHandle, CONFIG_PIN_RLED, !PIN_getOutputValue(pinHandle));
101     }
102     else if(status == EasyLink_Status_Aborted)
103     {
104         /* Toggle GLED to indicate command aborted */
105     }
```

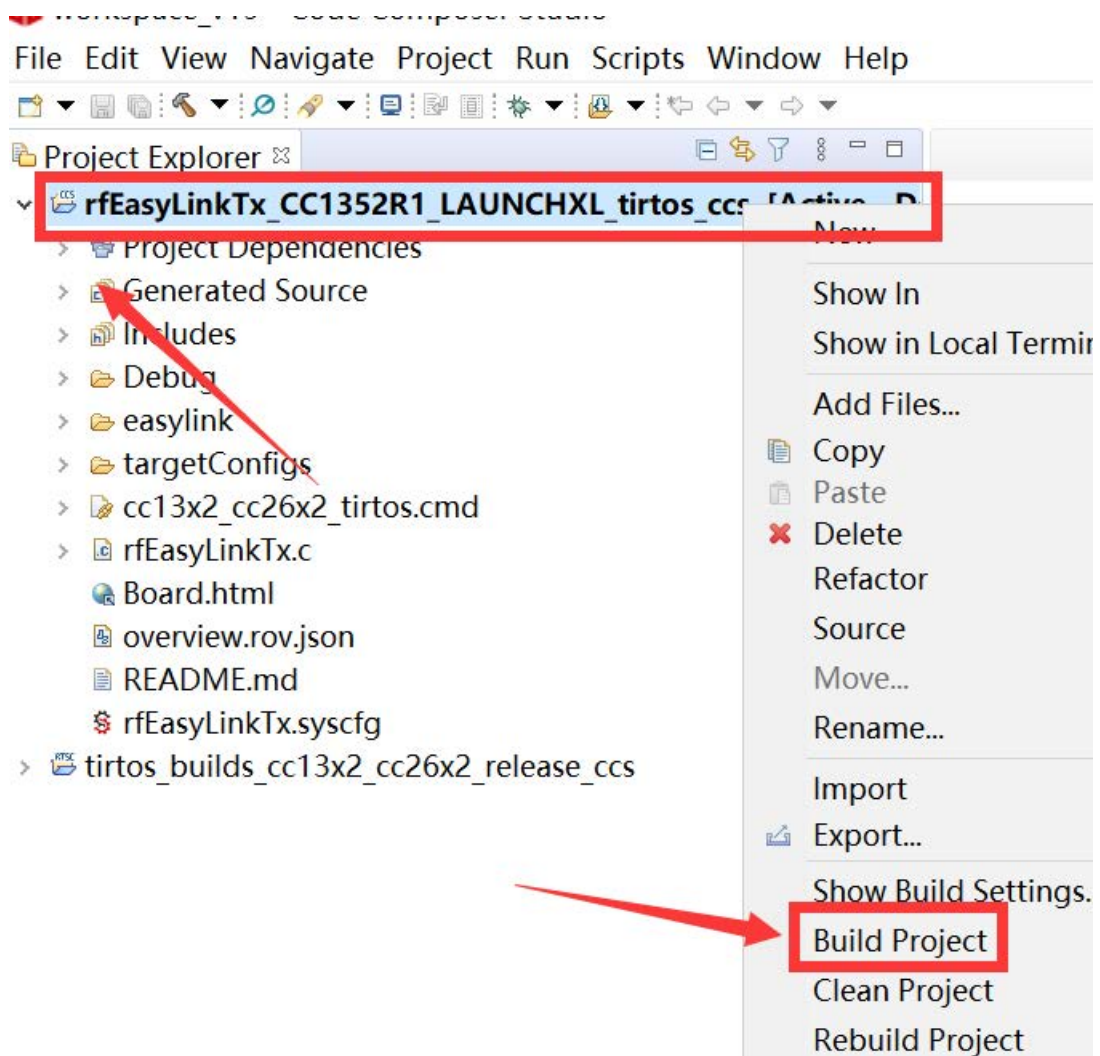
Red arrows point to the file name "rfEasyLinkRx.c" in the editor tab, the function signature "rxDoneCb(EasyLink_RxPacket * rxPacket, EasyLink_Status status)" on line 95, and the line "PIN_setOutputValue(pinHandle, CONFIG_PIN_RLED, !PIN_getOutputValue(pinHandle));" on line 100, where a breakpoint is set.

7. For another module, according to the following path to find the sending end project:

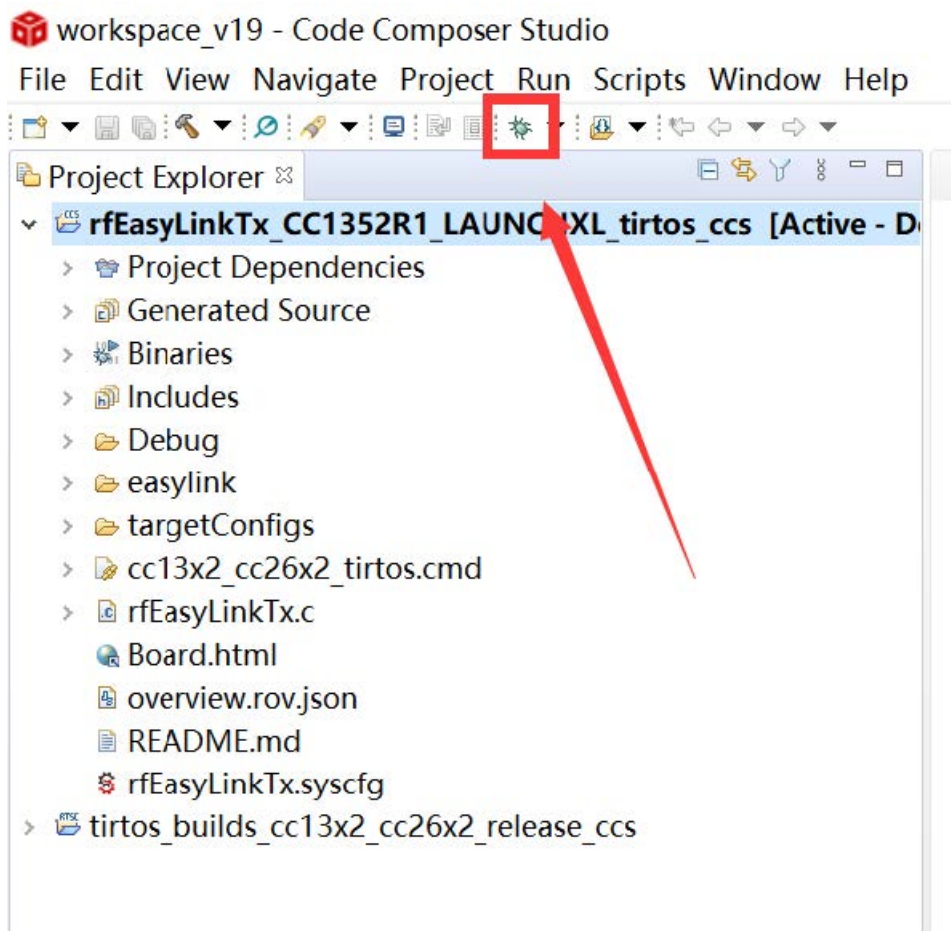
ti\simplelink_cc13x2_26x2_sdk_5_10_00_48\examples\rtos\ CC1352R1_LAUNCHXL \ easylink\
rfEasyLinkTx\tirtos\ccs



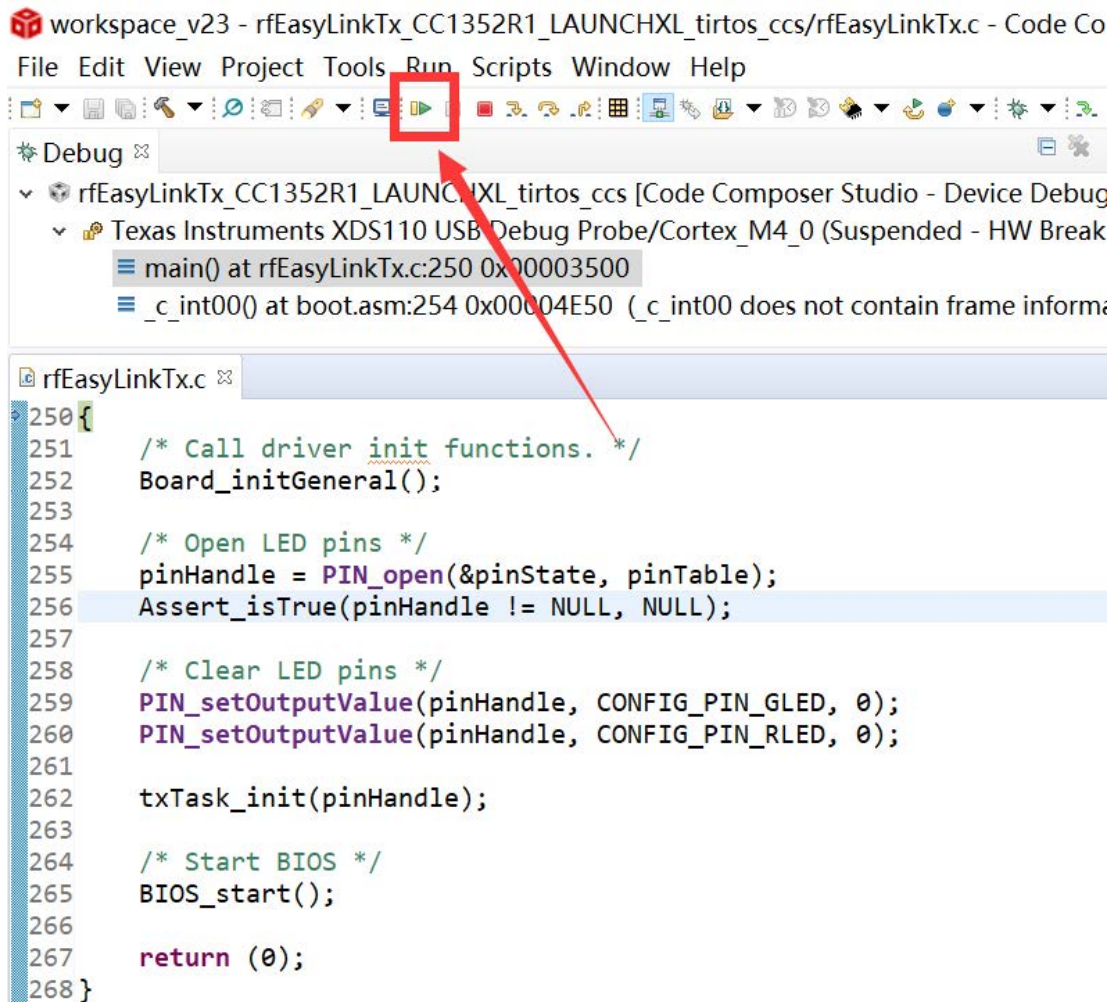
8. Right Click the project to build the sending end project



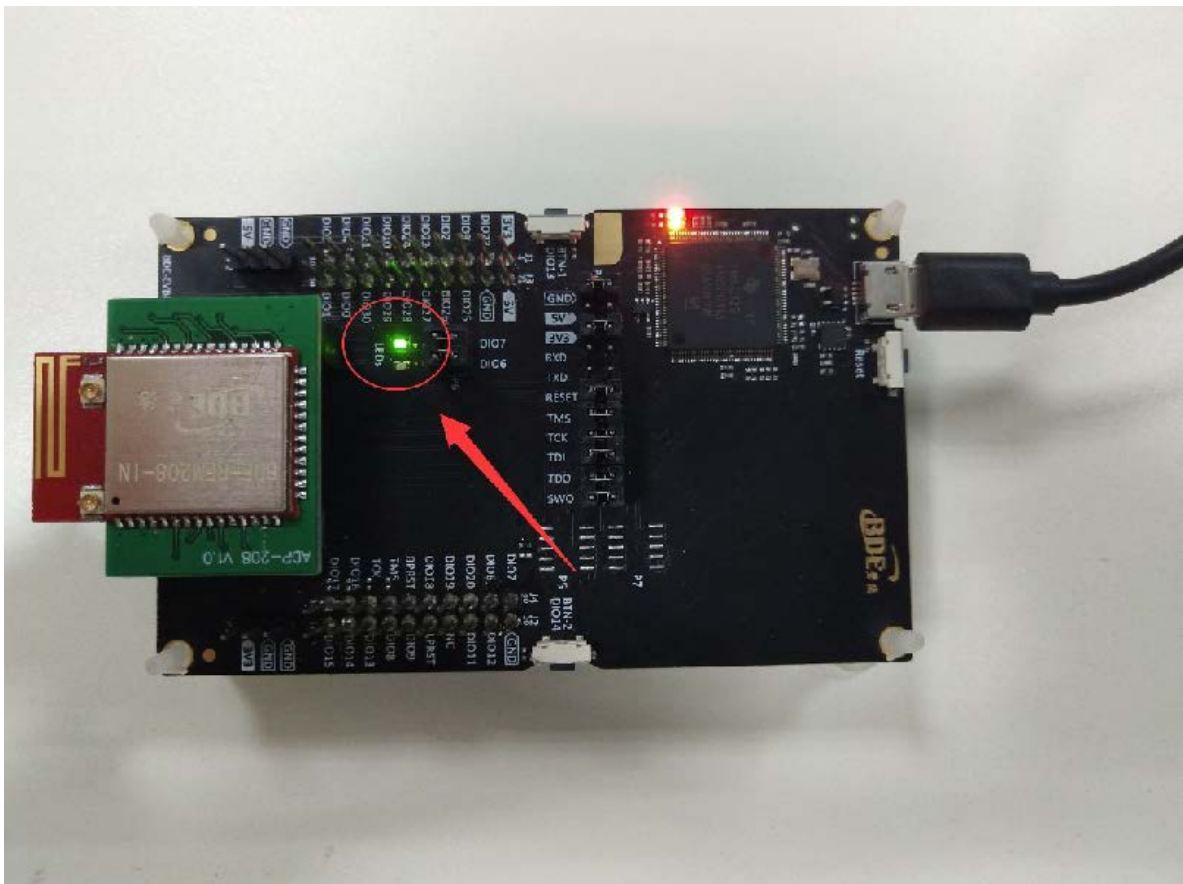
9. Click this bug icon (means download and debugging)



10. Click this bug icon (means download and debugging)



11. You can see the lights flashing (means sending a data uninterruptedly)



12. The program stops at the breakpoint

workspace_v22 - rfEasyLinkRx_CC1352R1_LAUNCHXL_tirtos_ccs/rfEasyLinkRx.c - C

File Edit View Project Tools Run Scripts Window Help

Debug

▼ Texas Instruments XDS110 USB Debug Probe/Cortex_M4_0 (Suspended - HW

rxDoneCb(struct <unnamed> *, int)() at rfEasyLinkRx.c:100 0x000039C2

rfEasyLinkRx.c

```
93/**** Function definitions *****/
94#ifdef RFEASYLINKRX_ASYNC
95void rxDoneCb(EasyLink_RxPacket * rxPacket, EasyLink_Status st
96{
97    if (status == EasyLink_Status_Success)
98    {
99        /* Toggle RLED to indicate RX */
100        PIN_setOutputValue(pinHandle, CONFIG_PIN_RLED, !PIN_get
101    }
102    else if(status == EasyLink_Status_Aborted)
103    {
104        /* Toggle GLED to indicate command aborted */
105        PIN_setOutputValue(pinHandle, CONFIG_PIN_GLED, !PIN_get
106    }
107    else
108    {
109        /* Toggle GLED and RLED to indicate error */
110        PIN_setOutputValue(pinHandle, CONFIG_PIN_GLED, !PIN_get
111        PIN_setOutputValue(pinHandle, CONFIG_PIN_RLED, !PIN_get
112    }
```

By far you should've built your first application successfully.

For further development, please check out the CC1352R1 datasheet, product information, and support | TI.com page and download the User Guide (<https://www.ti.com/lit/pdf/swcu185>)

Other Resources

- Mac OS Installer for SimpleLink CC13X2 26X2 SDK
- Linux Installer for SimpleLink CC13X2 26X2 SDK
- Mac OS Installer for Code Composer Studio IDE
- Linux Installer for Code Composer Studio IDE
- CC1352R SimpleLink™ High-Performance Multi-Band Wireless MCU
- Windows Installer for SmartRF Flash Programmer 2

Revision History

Revision	Date	Description
V1.0	15-Feb-2020	Initial Released
V2.0	14-Apr-2021	Changed template

More Questions:

Please search existing answers on TI E2E support forums

Contact your local TI sales representative.

Or

Contact BDE Technology, Inc.

China:

B2-403, 162 Science Ave, Huangpu District, Guangzhou, 510663

Tel: +86-020-28065335

Website: <http://www.bdecomm.com/cn/> Email: shu@bdecomm.com

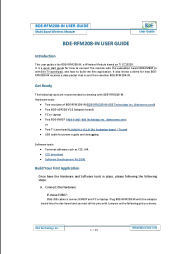
USA:

67 E Madison St, #1603A, Chicago, IL 60603

Tel: +1-312-379-9589

Website: <http://www.bdecomm.com/> Email: info@bdecomm.com

Documents / Resources

	<p>BDE BDE-RFM208-IN Multi-Band Wireless Module [pdf] User Guide BDE-RFM208-IN, Multi-Band Wireless Module</p>
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