

BDE-BLEM205-IN USER GUIDE

Introduction

This user guide is for BDE-BLEM205-IN, a Bluetooth 5.2 Low Energy Module based on TI CC2642R. 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-BLEM205-IN receives a data packet that is sent from a mobile phone APP - Lightblue.

Get Ready

The following tools are recommended to develop with BDE-BLEM205-IN.

Hardware tools:

- BDE-BLEM205-IN ([BDE-BLEM205-IN \(BT5.2\)-BDE Technology Inc. \(bdecomm.com\)](https://www.bdecomm.com/BDE-BLEM205-IN-(BT5.2)-BDE-Technology-Inc.-bdecomm.com))
- BDE-ADP05 V1.0 (adaptor board)
- PC or Laptop
- BDE-EVB07 ([BDE-EVB07-BDE Technology Inc. \(bdecomm.com\)](https://www.bdecomm.com/BDE-EVB07-BDE-Technology-Inc.-bdecomm.com))
- or
- TI Launchpad ([LAUNCHXL-CC26X2R1 Evaluation board | TI.com](https://www.ti.com/launchpad-cc26x2r1-evaluation-board))
- USB cable for power supply and debugging

Software tools:

- Terminal software such as CCS, IAR.
- [CCS download](#)
- [Software Development Kit \(SDK\)](#)
- [Lightblue](#)

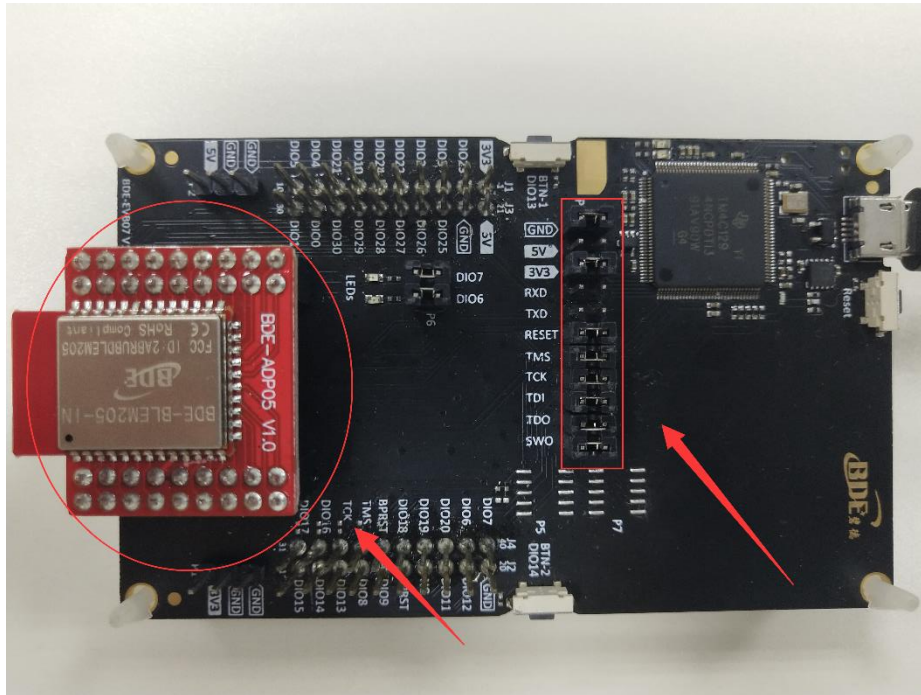
Build Your First Application

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

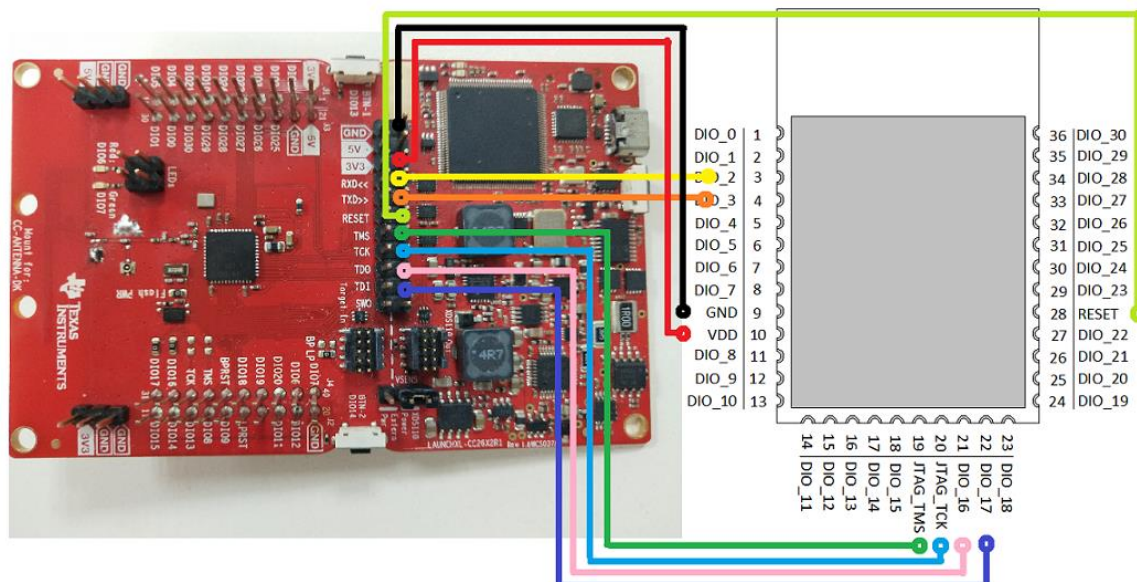
A. Connect the Hardware

If chose EVB07:

Use USB cable to connect EVB07 and PC or laptop. Plug BDE-BLEM205-IN with the adaptor board into the dev board and connect all the pins with Jumpers as the following picture shows.



If chose TI Launchpad:
The connection is as following.



Connection Designator	BDE-BLEM205-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
RXD	DIO2	RXD
TXD	DIO3	TXD

Optional: TDO, TDI, RXD, TXD

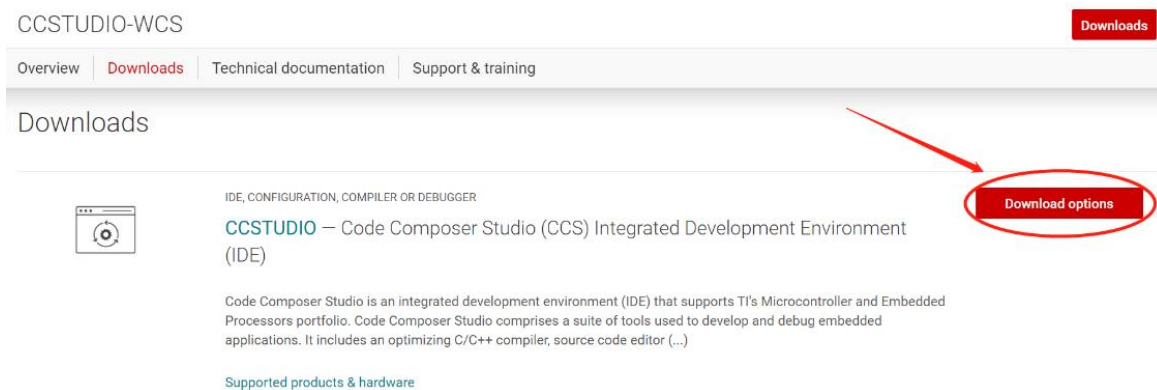
B. Build the Application

■ 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



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 \(24595266 KB\)](#)

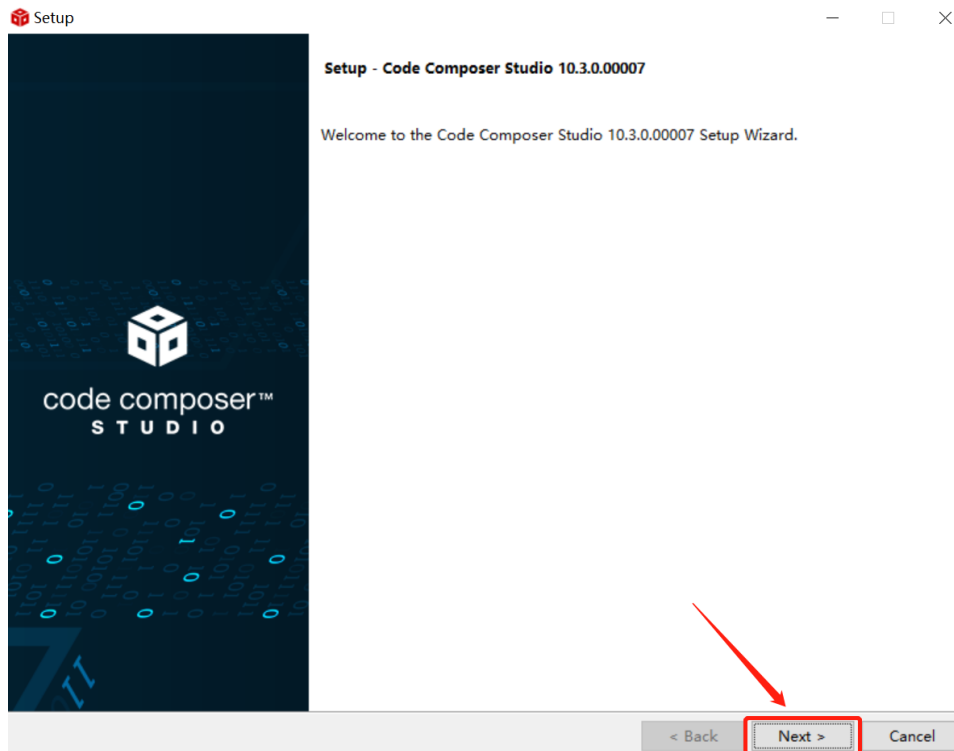
3. Unzip the package to a local disc

	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

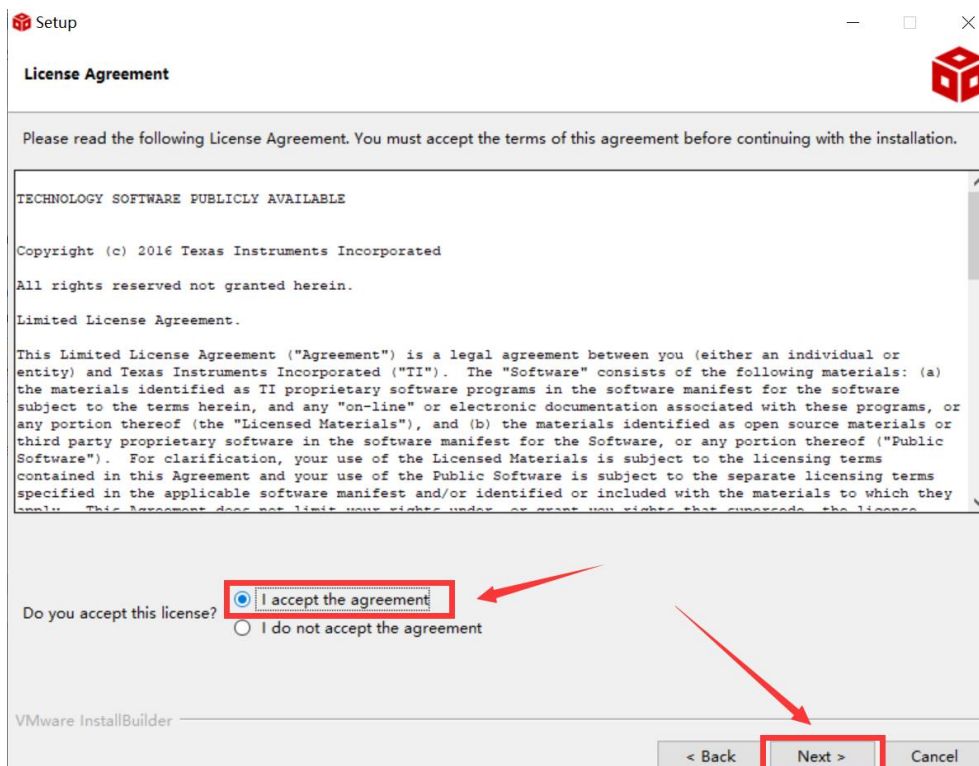
4. Click the setup of CCS

	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

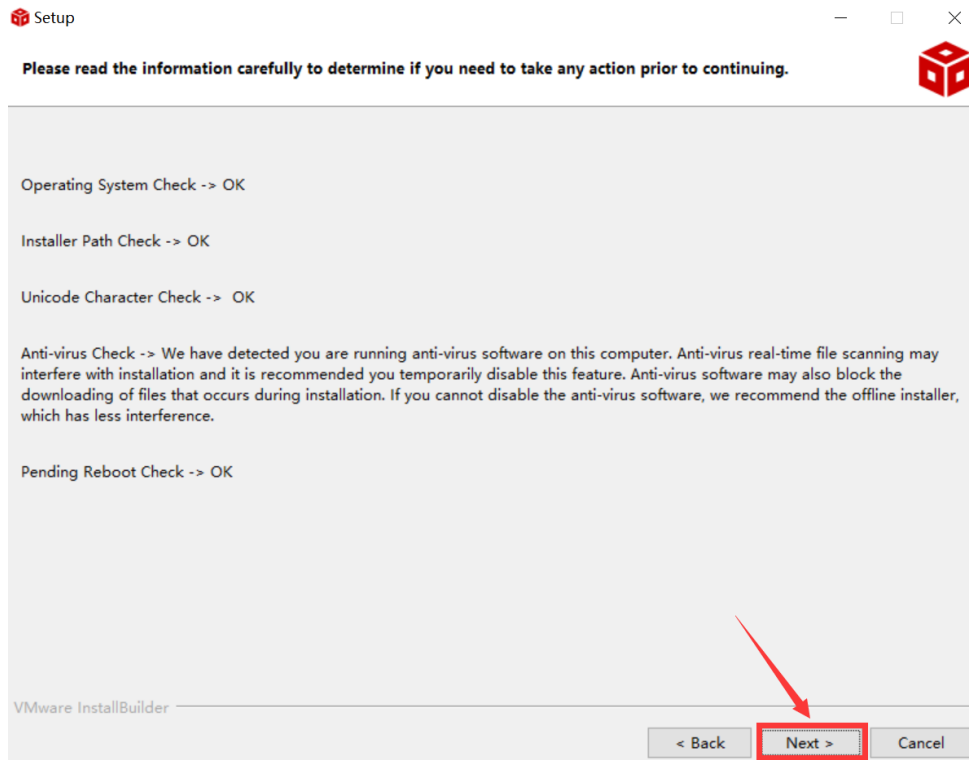
5. Click "Next"



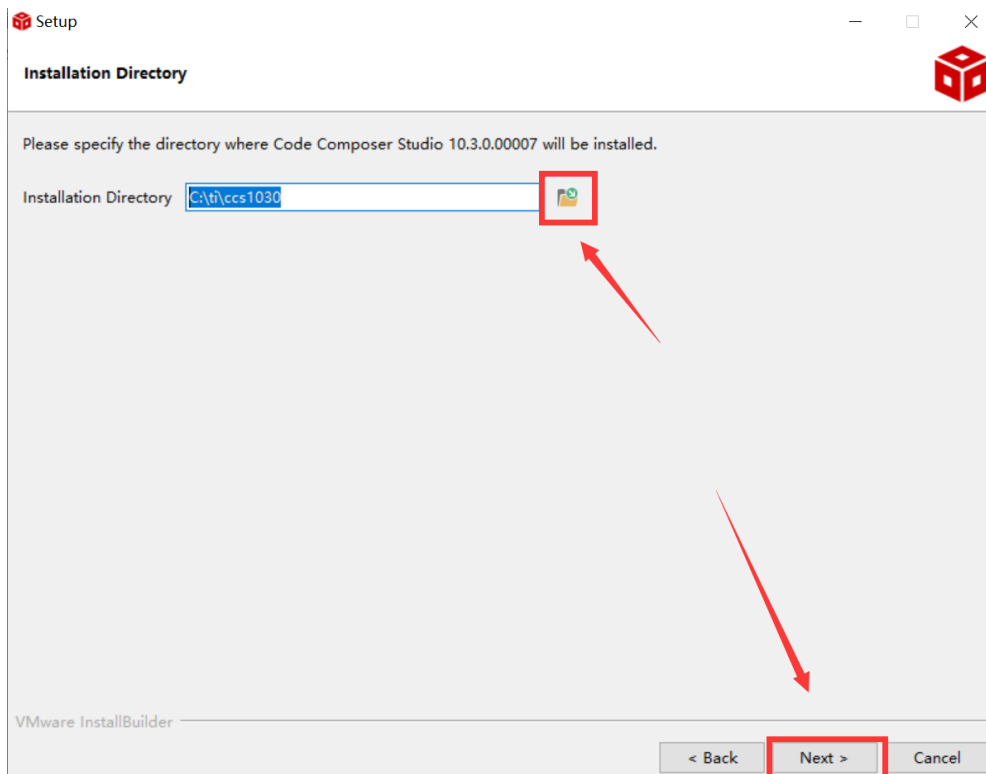
6. Select the default option



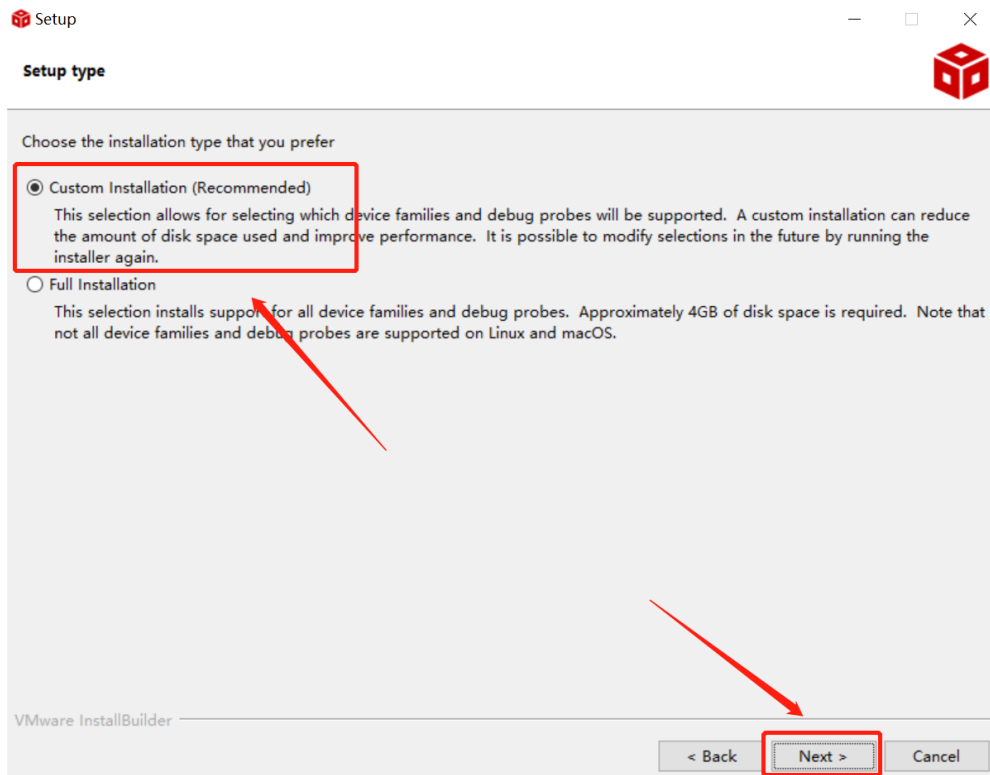
7. Click "Next"



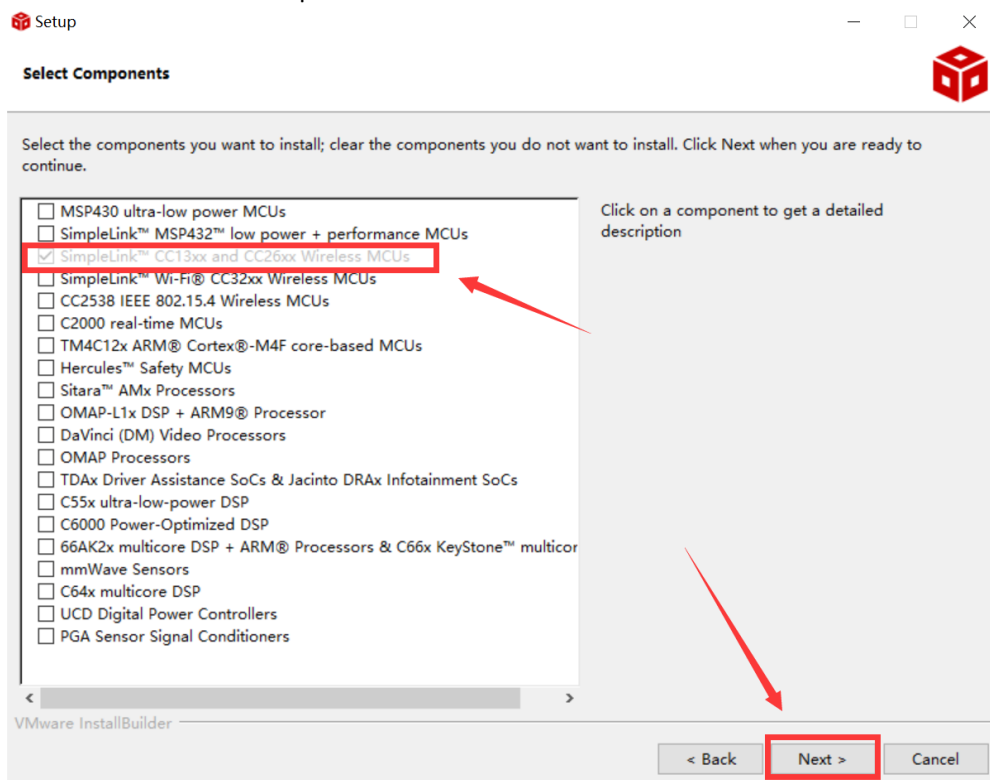
8. Select the Installation Directory



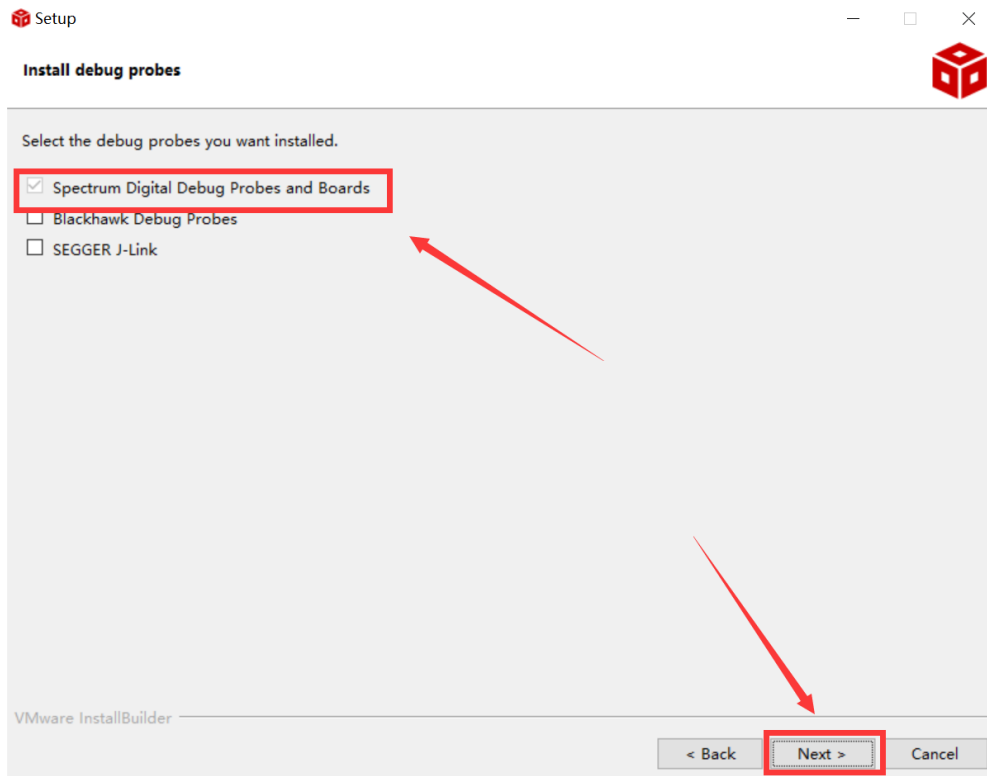
9. Select the default option



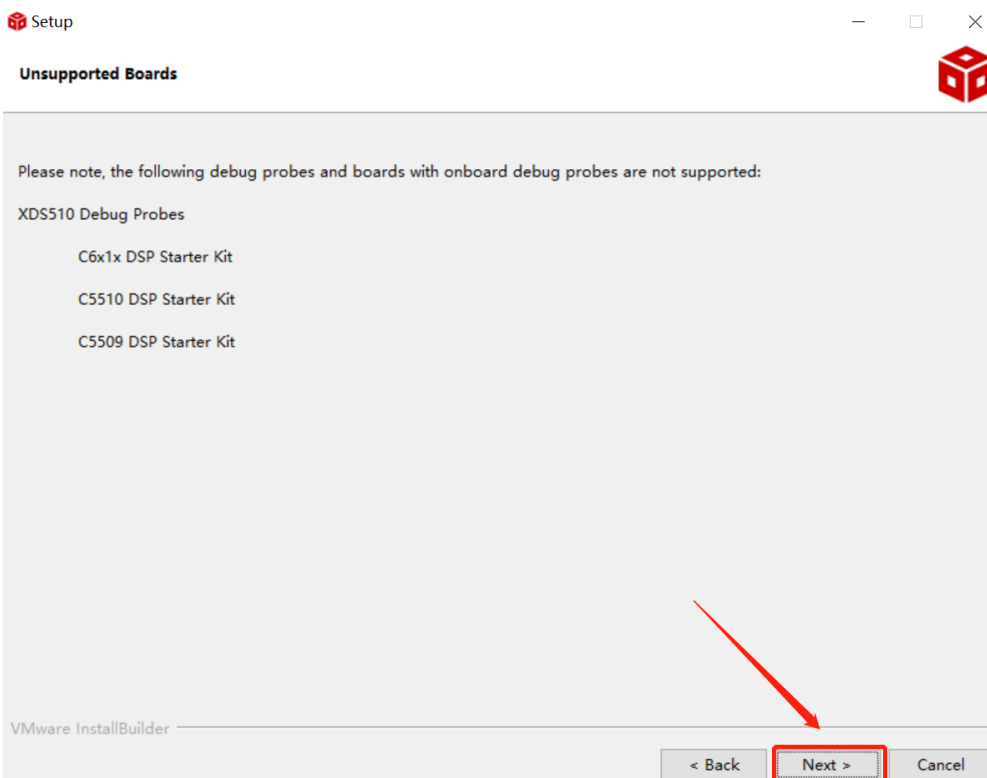
10. Select the component



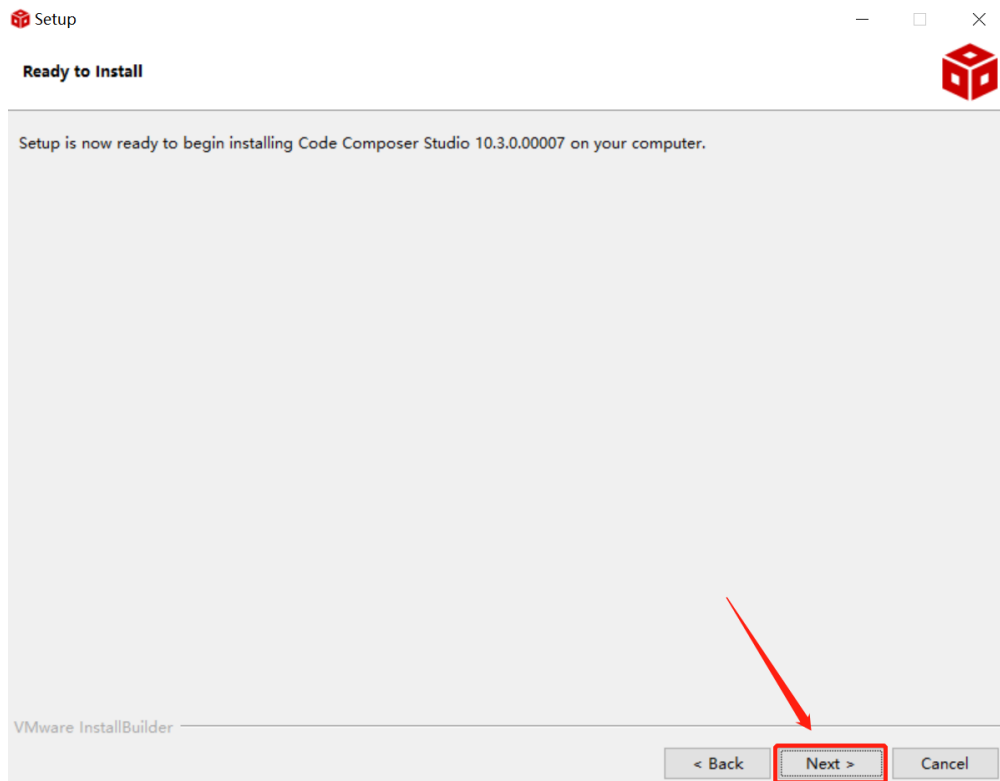
11. Select the default option



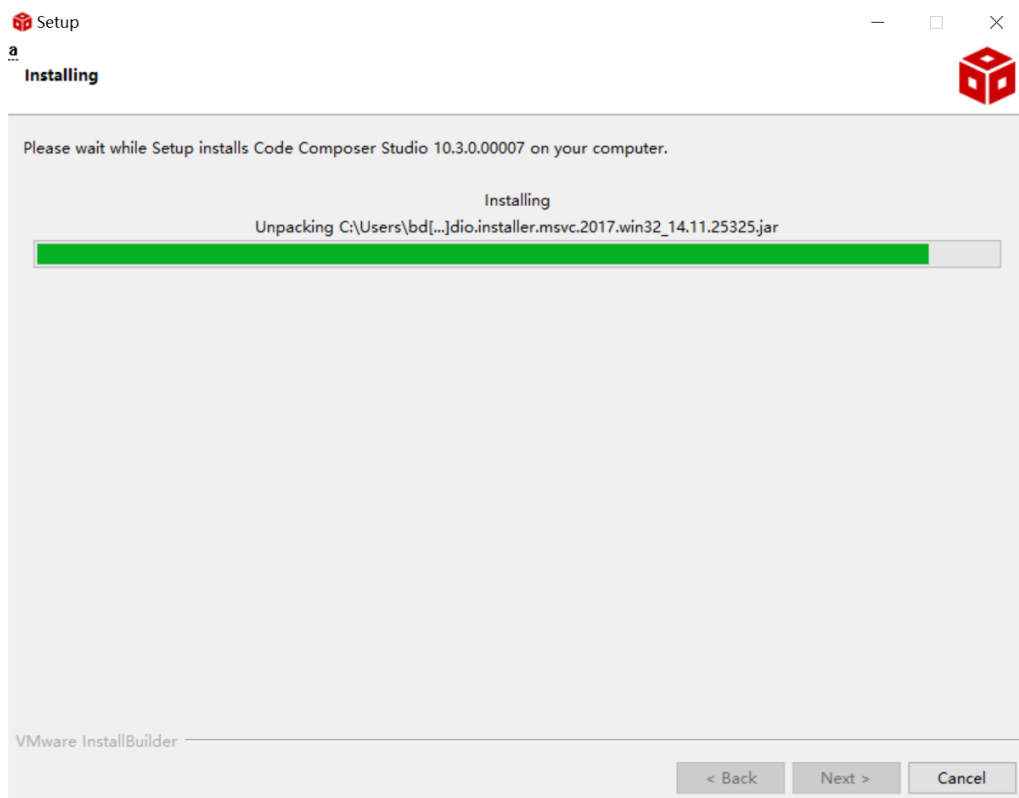
12. Click "Next"



13. Click "Next"



14. Waiting for installation to complete





- **Software Development Kit (SDK) installation**

1. Click on this option

SIMPLELINK-CC13X2-26X2-SDK Downloads

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

Primary software Supported products & hardware

	<p>SOFTWARE DEVELOPMENT KIT (SDK)</p> <p>SIMPLELINK-CC13X2-26X2-SDK – SimpleLink™ CC13x2 and CC26x2 software development kit</p> <p>Supported products & hardware</p>	<div>Download options</div> <div>Subscribe to alerts</div>
	<p>SOFTWARE DEVELOPMENT KIT (SDK)</p> <p>SIMPLELINK-CC13X2-26X2-SDK-CLOUD – SimpleLink™ CC13x2 and CC26x2 software development kit cloud development on TI Resource Explorer</p>	<div>Start evaluation</div>

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

Login

[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 Home

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

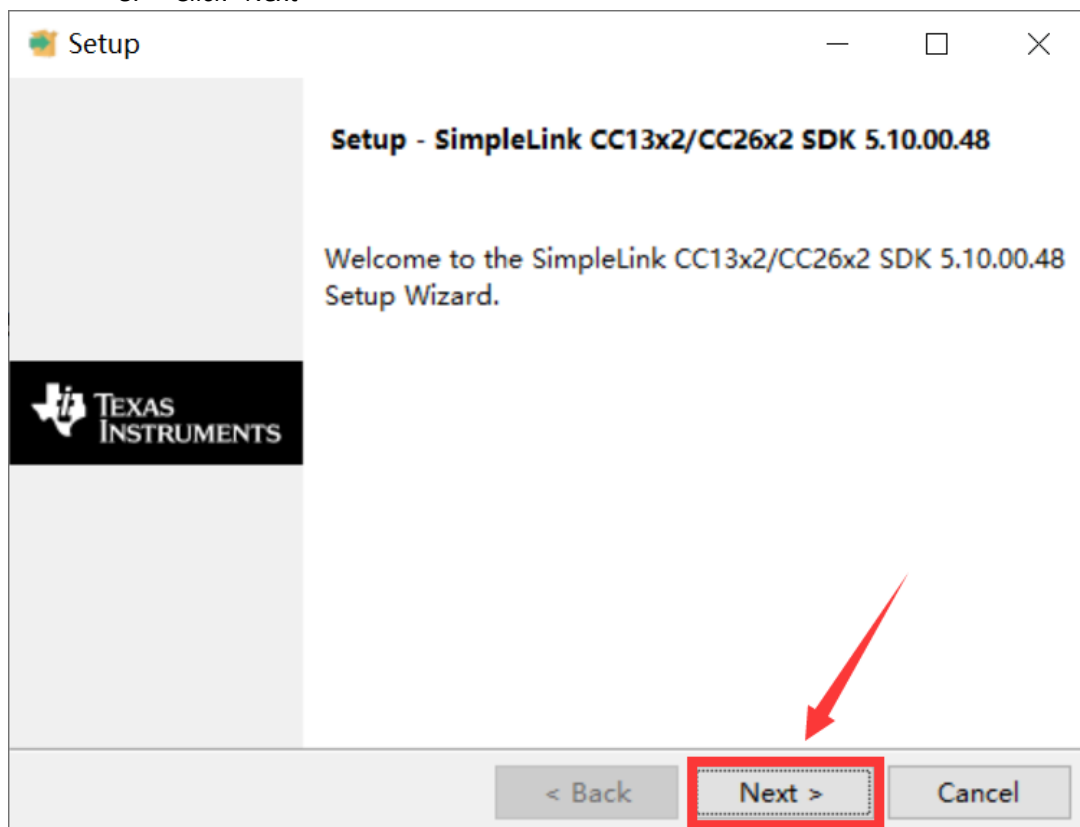
Thank you,
Texas Instruments

7. Installation

 simplelink_cc13x2_26x2_sdk_5_10_00_48.exe 2021/4/19 15:11



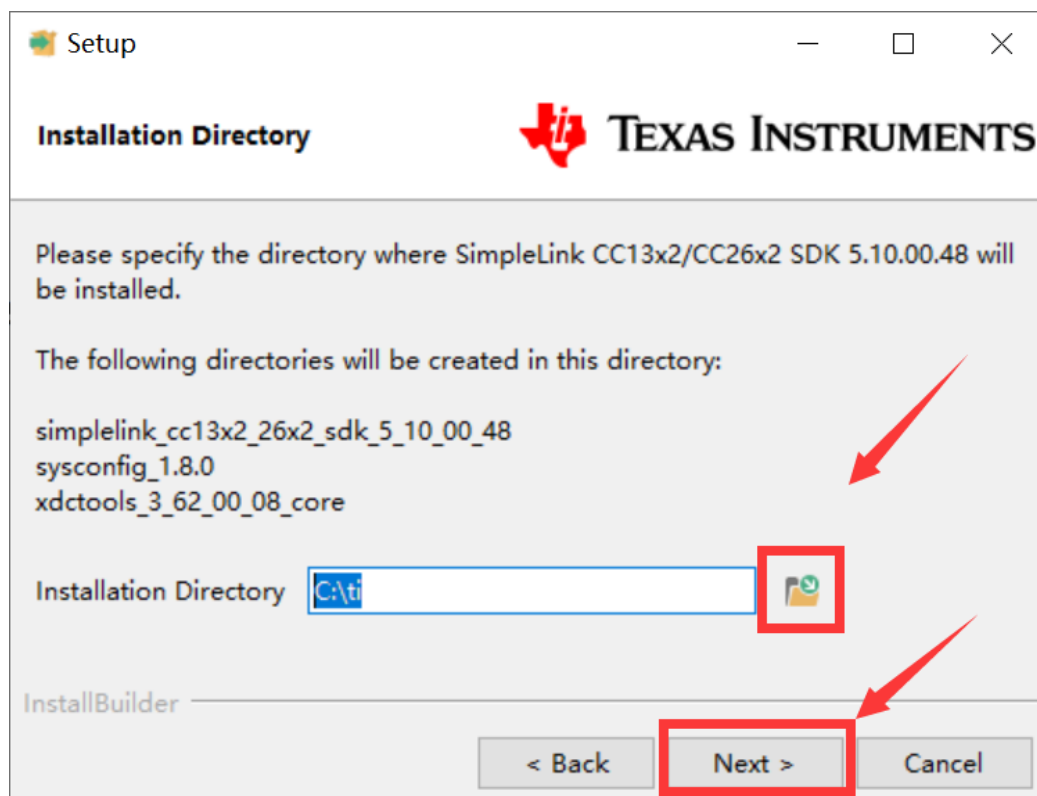
8. Click "Next"



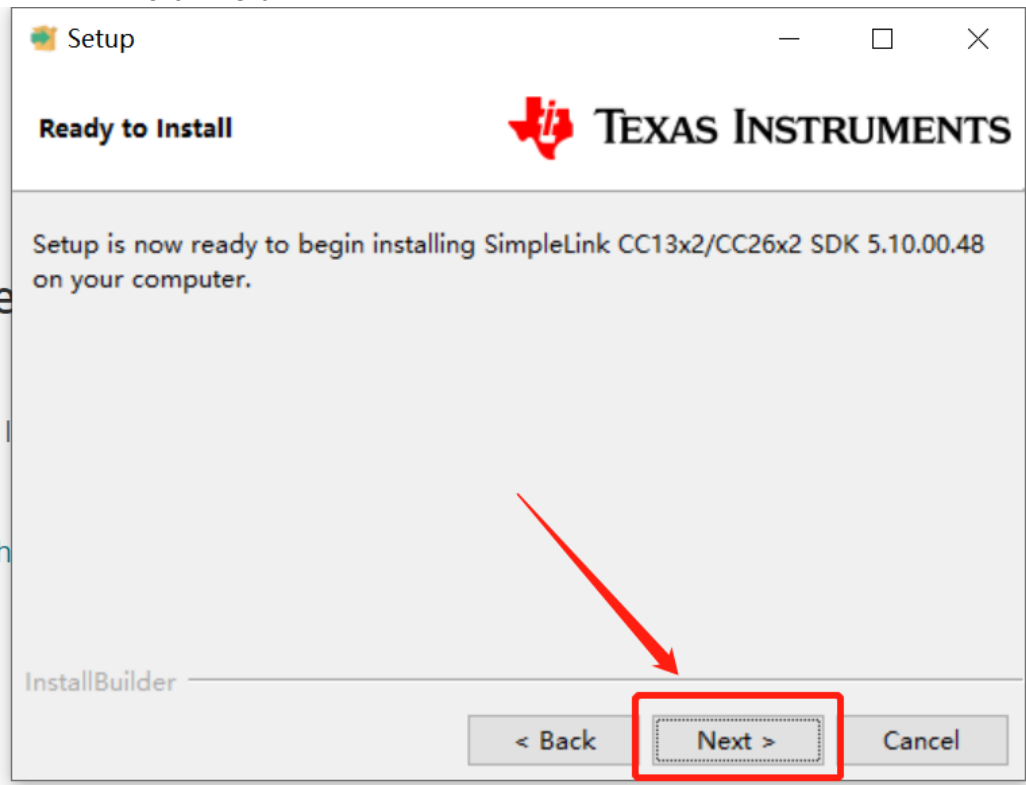
9. Select the default option



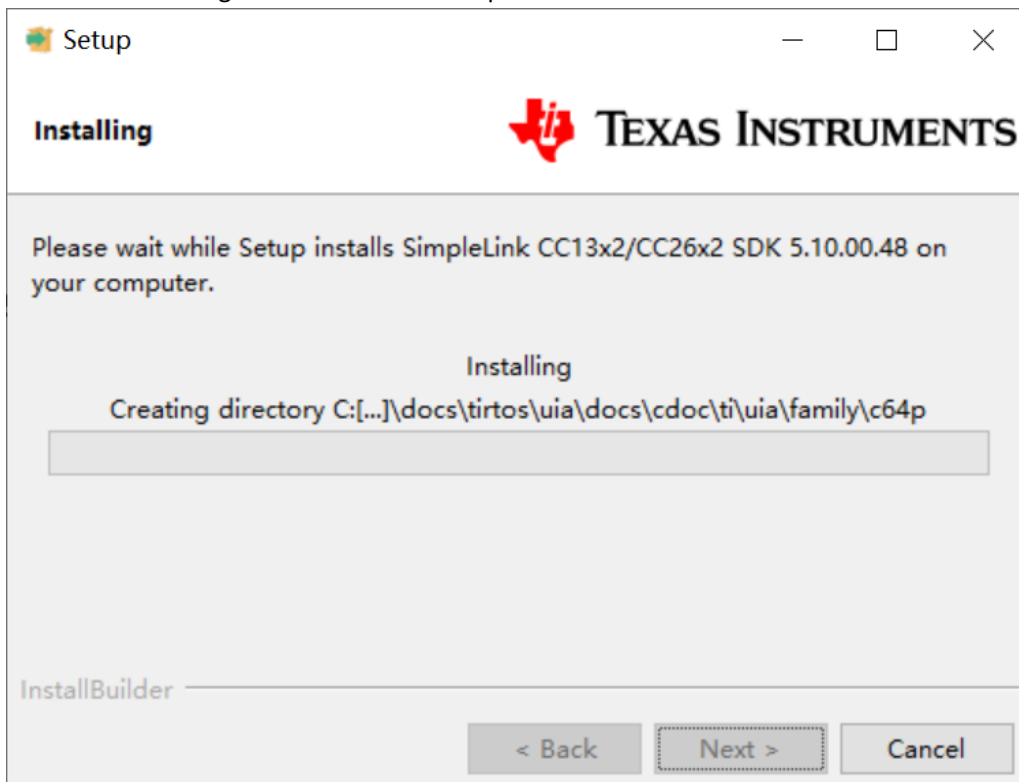
10. Select the Installation directory



11. Click "Next"

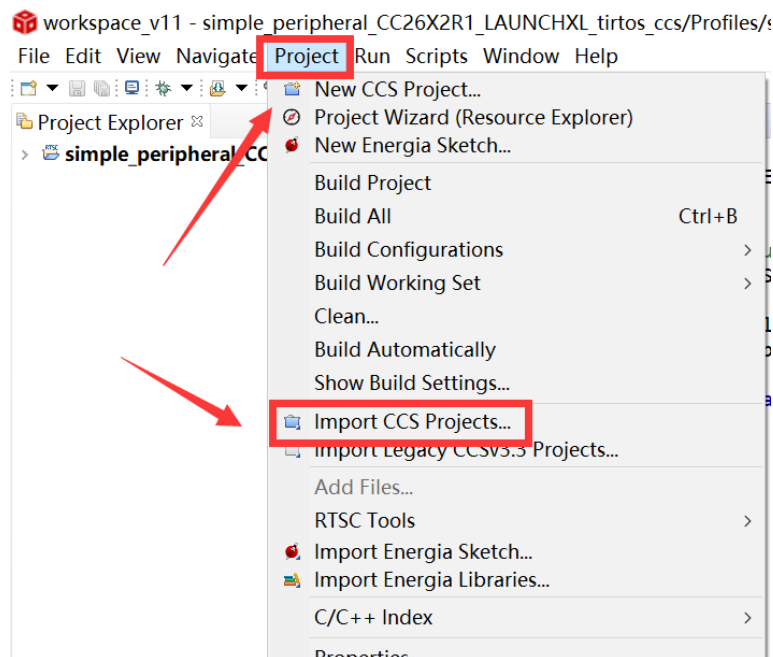


12. Waiting for installation to complete

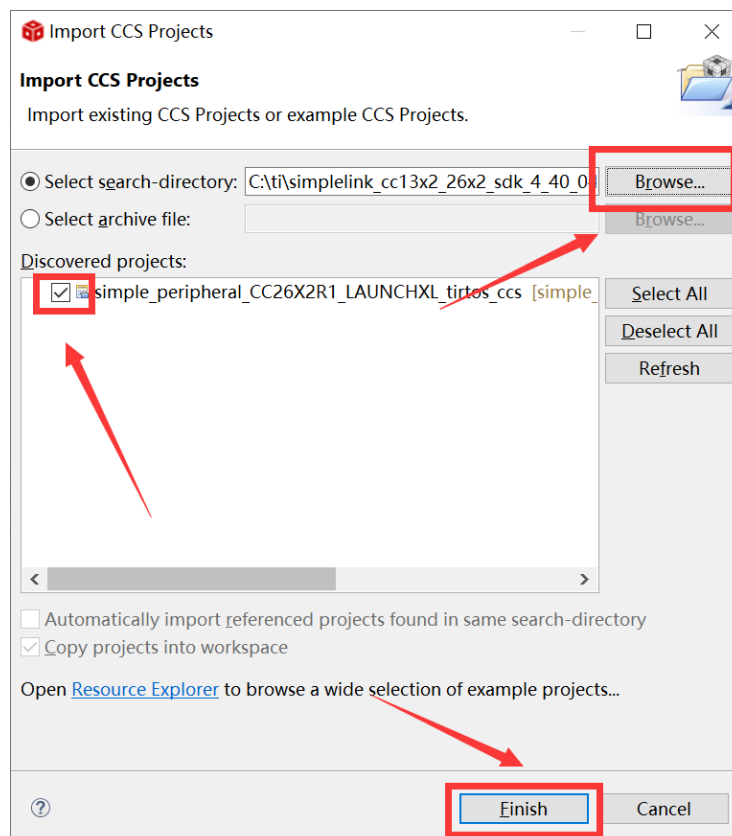


- Run an example/demo code

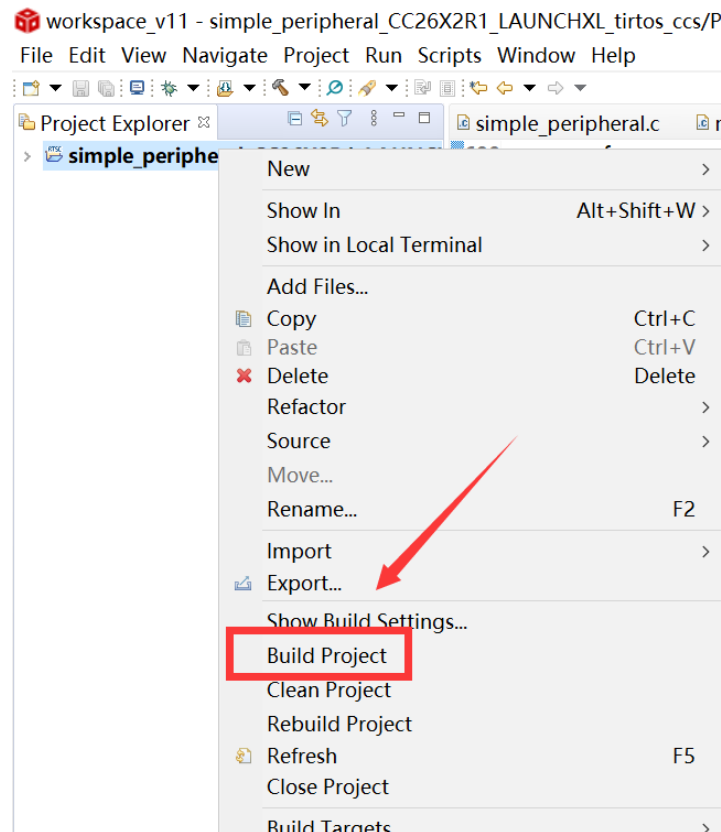
1. Find the option named "Import CCS project..."



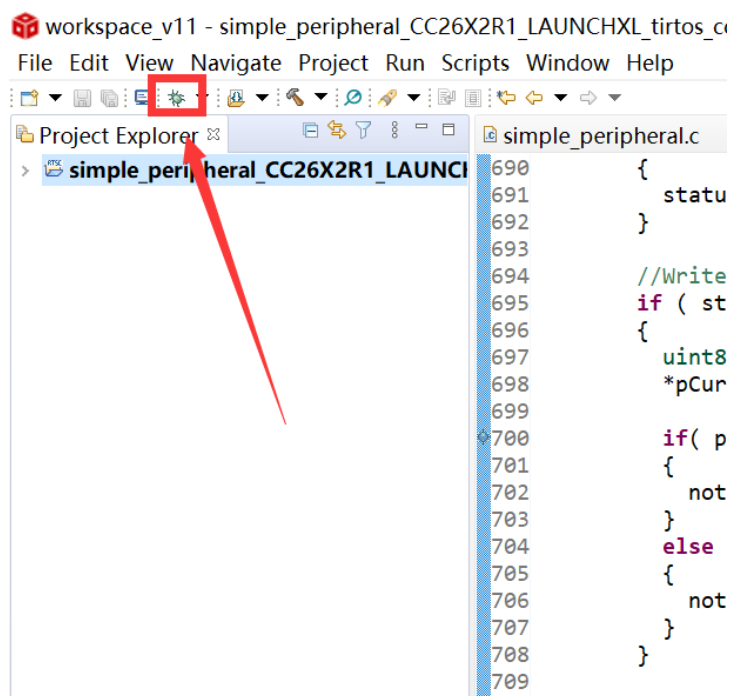
2. According to the following path to find the project:
ti\simplelink_cc13x2_26x2_sdk_5_10_00_48\examples\rtos\CC26X2R1_LAUNCHXL\ble5stack\simple_peripheral\tirtos\ccs



3. Right Click the project to build project

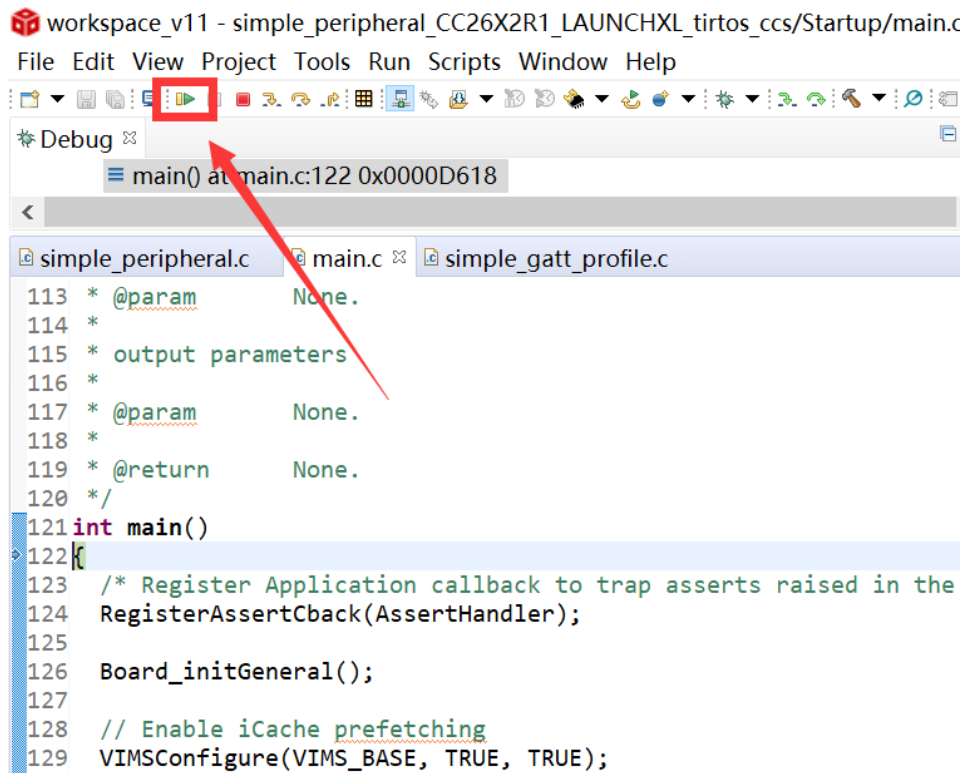


4. Click this bug icon (means download and debugging)

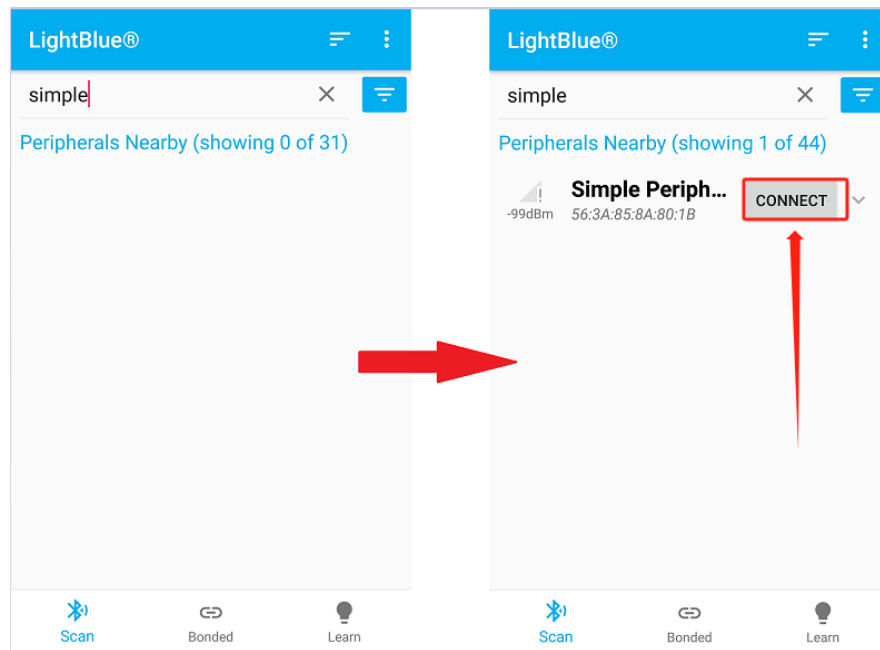


5. [Download and start Lightblue](#) (an APP on your mobile device)

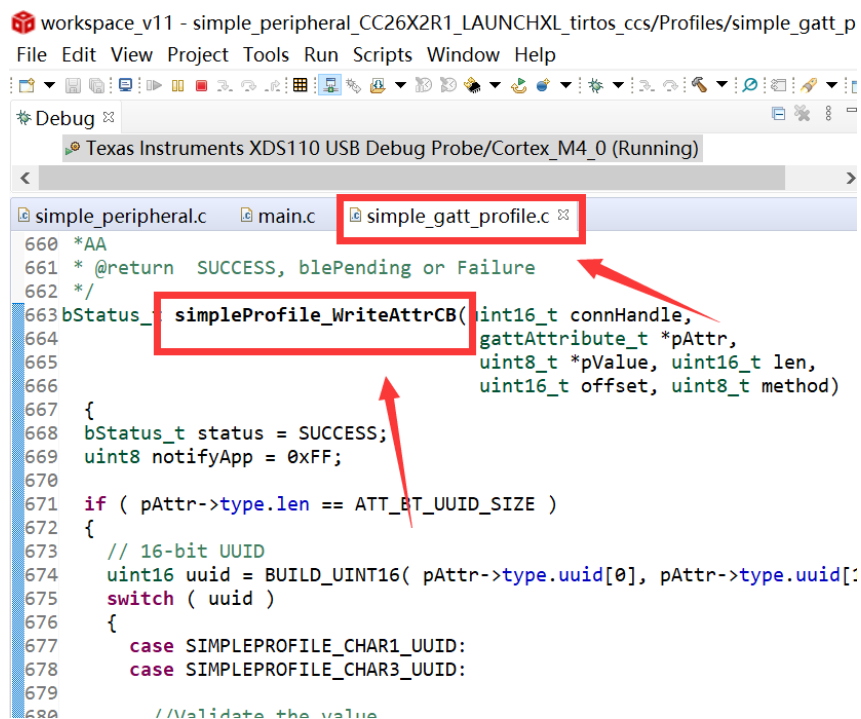
6. Click on this option to start debugging



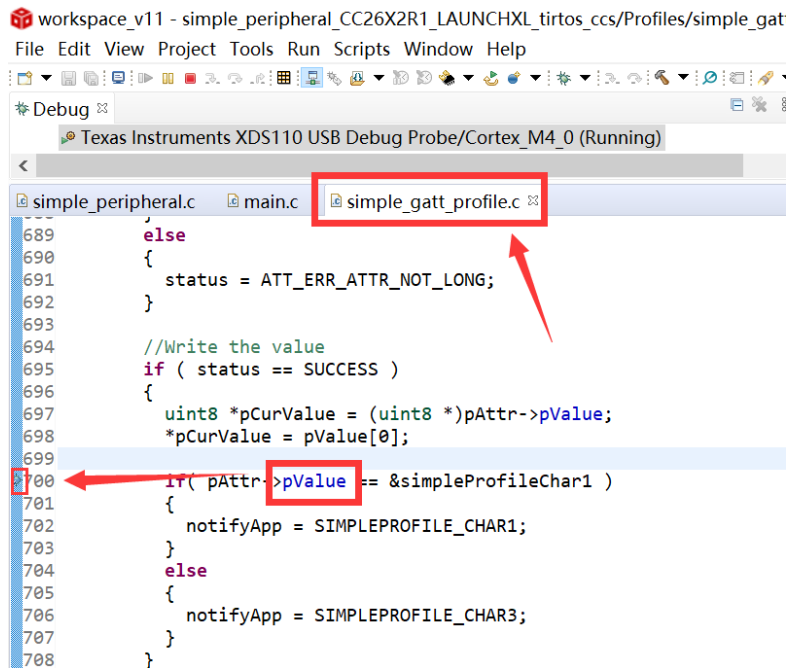
7. BDE-BLEM205-IN is advertising, you can receive the signal on Lightblue, then click “connect” to connect the mobile phone and the BDE-BLEM205-IN



8. Find the file which is named “simple_gatt_profile.c” and the function which is named “simpleProfile_WriteAttrCB”

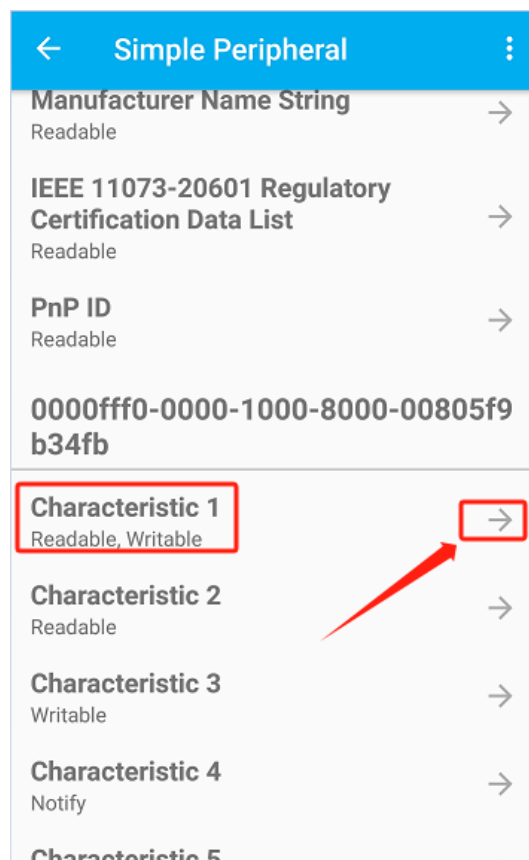


9. Find “pValue” in the function and set a breakpoint at the same line

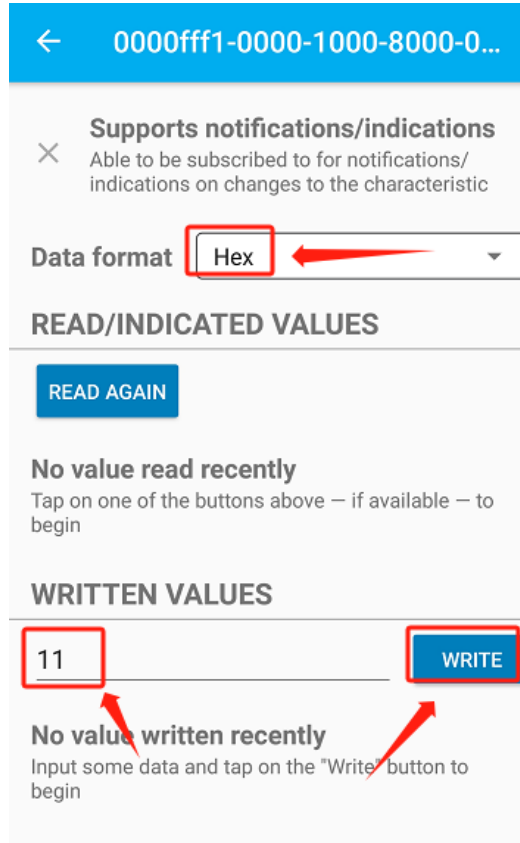


```
workspace_v11 - simple_peripheral_CC26X2R1_LAUNCHXL_tirtos_ccs/Profiles/simple_gat
File Edit View Project Tools Run Scripts Window Help
Texas Instruments XDS110 USB Debug Probe/Cortex_M4_0 (Running)
simple_peripheral.c main.c simple_gatt_profile.c
689     else
690     {
691         status = ATT_ERR_ATTR_NOT_LONG;
692     }
693
694     //Write the value
695     if ( status == SUCCESS )
696     {
697         uint8 *pCurValue = (uint8 *)pAttr->pValue;
698         *pCurValue = pValue[0];
699
700     if( pAttr->pValue == &simpleProfileChar1 )
701     {
702         notifyApp = SIMPLEPROFILE_CHAR1;
703     }
704     else
705     {
706         notifyApp = SIMPLEPROFILE_CHAR3;
707     }
708 }
```

10. Click the up arrow to send a message to the BDE-BLEM205-IN



11. Send 0x11 to the BDE-BLEM205-IN



← 0000fff1-0000-1000-8000-0...

✕ **Supports notifications/indications**
Able to be subscribed to for notifications/indications on changes to the characteristic

Data format **Hex**

READ/INDICATED VALUES

READ AGAIN

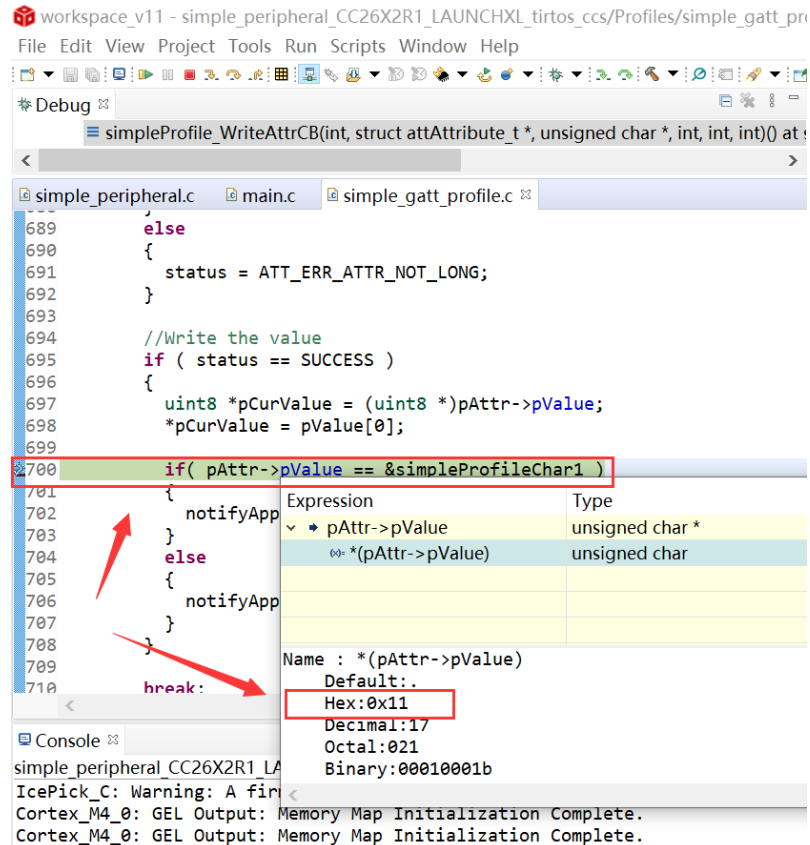
No value read recently
Tap on one of the buttons above — if available — to begin

WRITTEN VALUES

11 **WRITE**

No value written recently
Input some data and tap on the "Write" button to begin

12. The program stops at the breakpoint, the value received is 0x11



```

workspace_v11 - simple_peripheral_CC26X2R1_LAUNCHXL_tirtos_ccs/Profiles/simple_gatt_pr
File Edit View Project Tools Run Scripts Window Help
Debug
simpleProfile_WriteAttrCB(int, struct attAttribute_t *, unsigned char *, int, int, int) at:
simple_peripheral.c | main.c | simple_gatt_profile.c
689     else
690     {
691         status = ATT_ERR_ATTR_NOT_LONG;
692     }
693
694     //Write the value
695     if ( status == SUCCESS )
696     {
697         uint8 *pCurValue = (uint8 *)pAttr->pValue;
698         *pCurValue = pValue[0];
699
700     if( pAttr->pValue == &simpleProfileChar1 )
701     {
702         notifyApp
703     }
704     else
705     {
706         notifyApp
707     }
708 }
709
710 break:

```

Expression	Type
pAttr->pValue	unsigned char *
*(pAttr->pValue)	unsigned char

Name : *(pAttr->pValue)
Default:..
Hex:0x11
Decimal:17
Octal:021
Binary:00010001b

```

simple_peripheral_CC26X2R1_LA
IcePick_C: Warning: A fir
Cortex_M4_0: GEL Output: Memory Map Initialization Complete.
Cortex_M4_0: GEL Output: Memory Map Initialization Complete.

```

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

For further development, please check out the [CC2642R data sheet, 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](#)

[CC2642R SimpleLink™ Bluetooth® 5.2 Low Energy Wireless MCU](#)

[Windows Installer for SmartRF Flash Programmer 2](#)

More Questions:

Please search existing answers on [TI E2E support forums](#)

Contact your local TI sales representative.

Or

Contact BDE Technology, Inc.

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