



AWMF-0146-0147-DK-UG
Development Kit Control Software
Installation and User's Guide

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2 VERIFY PACKING LIST

Your AWMF-0146/7 Development Kit comes with the following components:

1. Characterized AWMF-0146/7 Evaluation Board with Mounted Heat Sink
2. Optional: Loose Parts for Evaluation
3. SPI Interposer Board
4. I2C/SPI Interface Module
5. USB Cable for I2C/SPI Interface
6. High Speed IO Cable Assembly
7. Power Supply Cable Assembly
8. Banana Plugs Set
9. Quick Start Guide one-page with link for software and documents download, AWMF-01xx-DKnn-QSG.pdf



There will be 2 software installation steps. One is for the NI-8452 National Instruments USB-SPI controller, and the other is for the device control software.

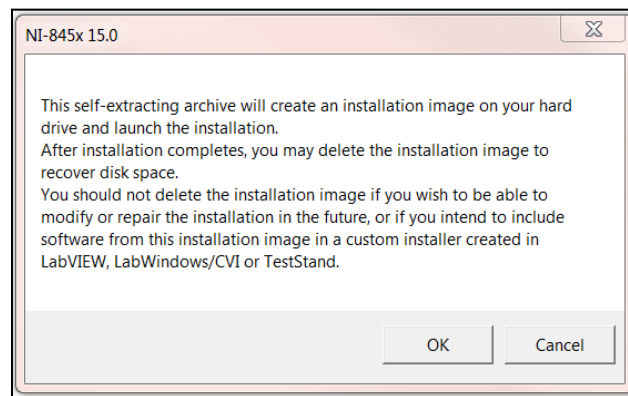


Do not connect any cables to your test board until the proper steps have been followed. This guide will outline the steps necessary to safely power up and control your test board.

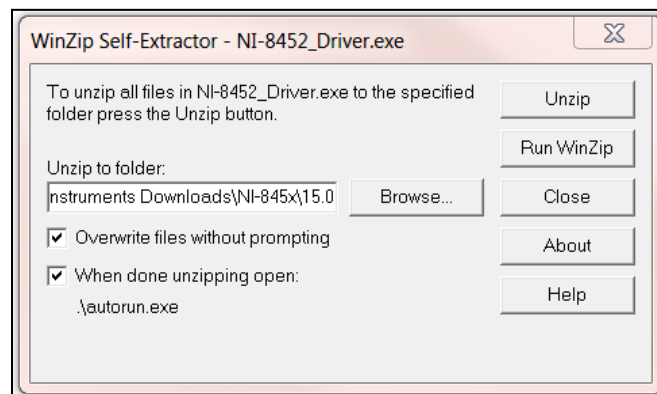
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3 INSTALL NI-USB DRIVER SOFTWARE

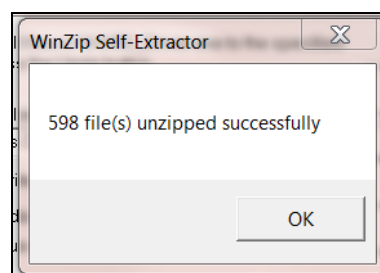
Your development kit comes with the National Instruments 8452 USB-SPI Interface driver, refer to link mentioned on the Development Kit Quick Start Guide: AWMF-0yyy-DKxxx-QSG.pdf.



Click “OK” to allow the driver to continue.

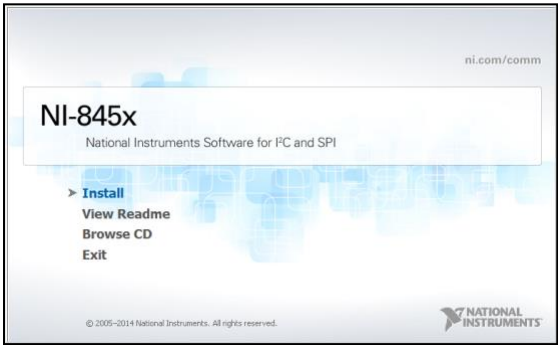


Click “Unzip” to continue.

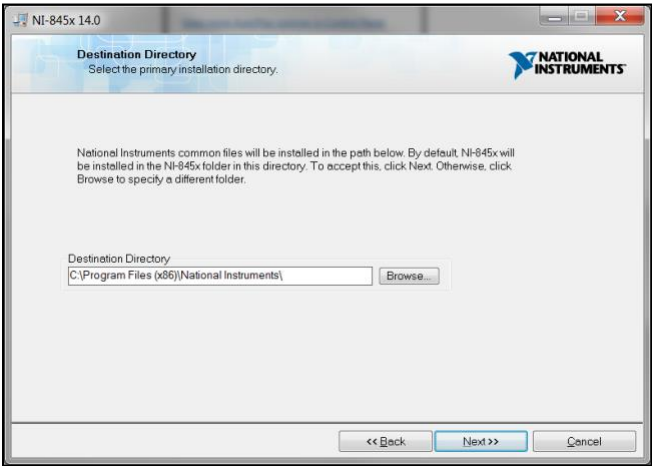


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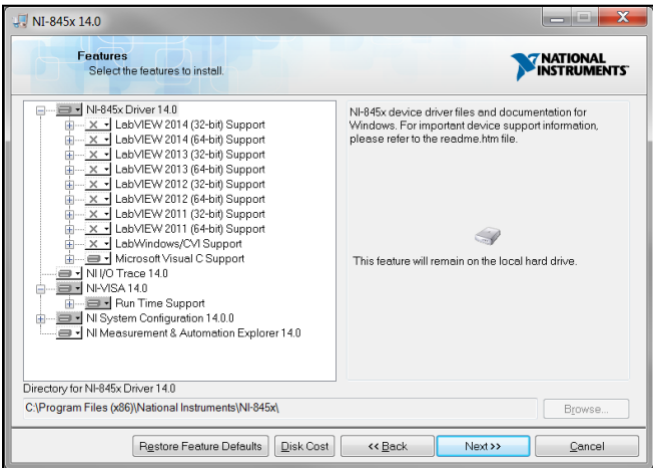
Click “OK” to continue.



Click “Install” to continue.

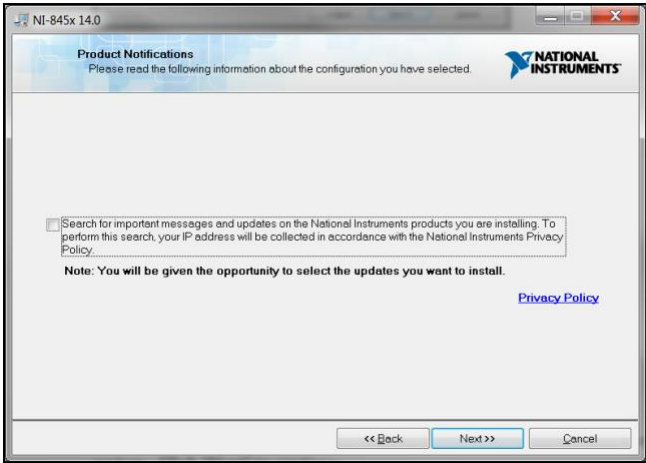


Use the default Destination Directory by clicking “Next”.

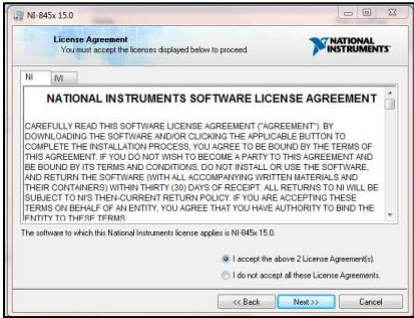


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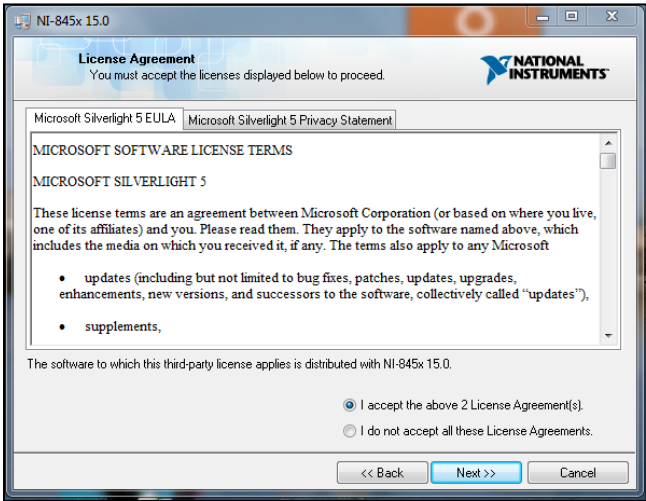
The driver software installer will automatically choose the support files needed for your system. Click “Next” to continue.



Un-check the “Search for important messages” box, then click “Next” to continue.

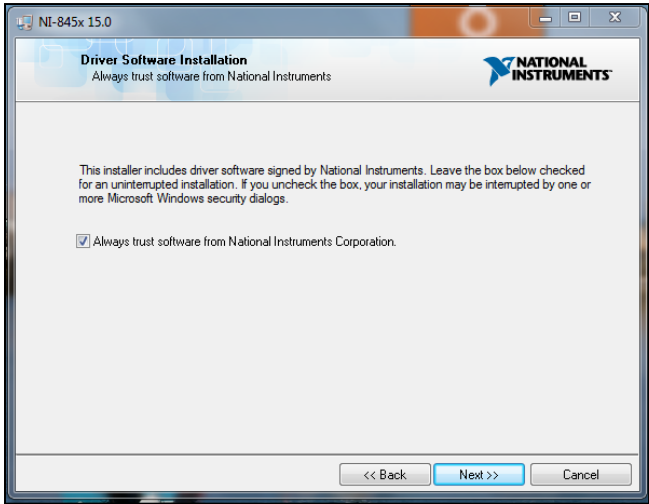


Click the accept license agreements button, then click “Next” to continue. This screen may not appear if your system already has National Instruments software installed.

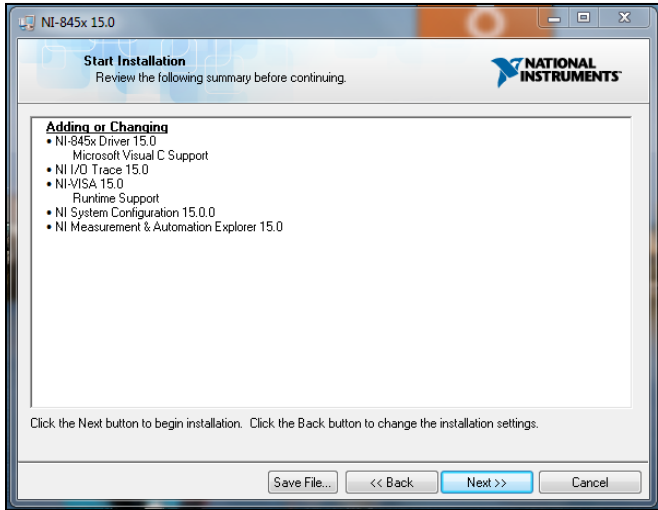


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Click the accept license button, then click “Next” to continue. This screen may not appear if Microsoft Silverlight is already installed and up to date on your system.

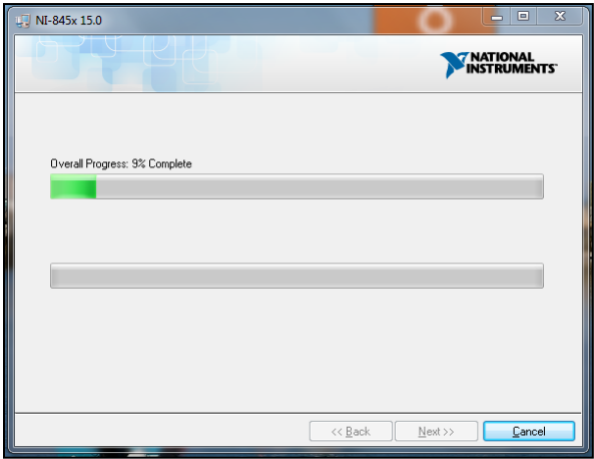


Check the trust NI software box, then click “Next” to continue. This screen may not appear if your system already has NI software installed.

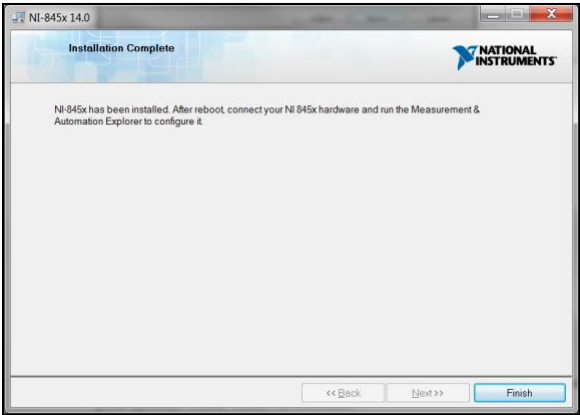


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Your system may show a different set of software tools than the image shown above, depending on past installations. Click “Next” to continue.



The NI-8452 driver and support files will then be installed. It may take several minutes depending on your system's existing configuration.



Click “Finish” to complete the install of the NI-8452 USB-SPI driver. You may be prompted to restart your computer, in which case you should click the “restart” button

4 PLUG IN NI-USB SPI DEVICE

Your system should now be configured with the driver for the National Instruments USB SPI device (NI-8452). Connect the USB cable to the NI-8452 and to your PC. Watch for any error or confirmation messages about the software driver installation.

The blue LED light labeled “USB” should now be lit.



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5 INSTALL AWMF-0146/7 CONTROL SOFTWARE

The Anokiwave Development Kit control software installer is found on your supplied USB flash drive.

5.1 Download archive onto your PC

Double click the file named "AWMF-0146_0147_GUI_vnnn_archive.exe".

The unzip path "c:\anokiwave\DK" is a suggestion, but it is not required. The software package will unzip to this folder and then the installer will exit.

***Note the location of unzipped control software so that you may easily locate it later.**

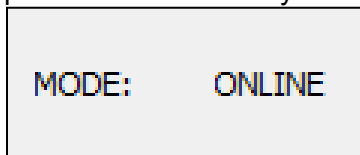
5.2 Verify NI Hardware Connection

Browse to the folder where you unzipped the control software. (The suggested location is C:\Anokiwave\DK folder)

Click on the file "AWMF_0146_0147_GUI.exe" to launch the graphical user interface Control Panel.



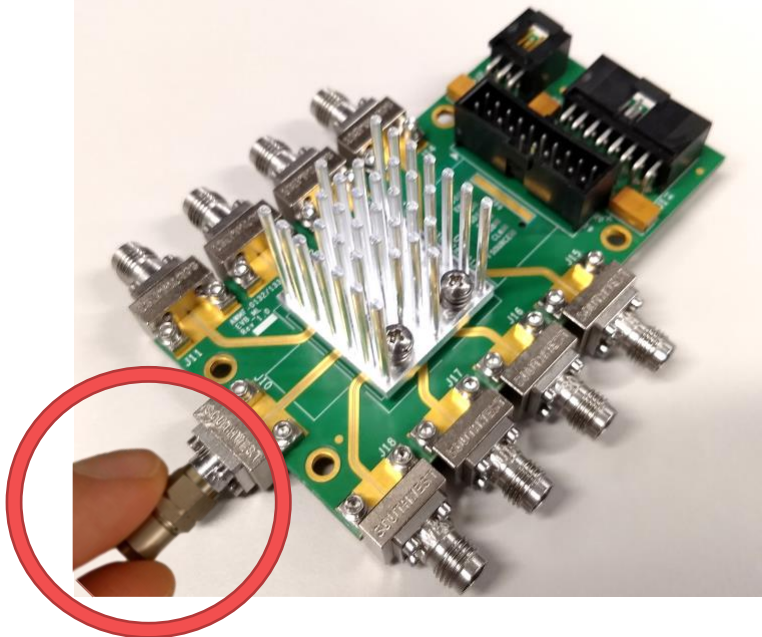
Check for a message in the Top-Right of the window that says "ONLINE". If the message shows "OFFLINE", please double check your USB cable connection and that you have followed the full installation instructions.



6 PREPARING THE TEST BOARD

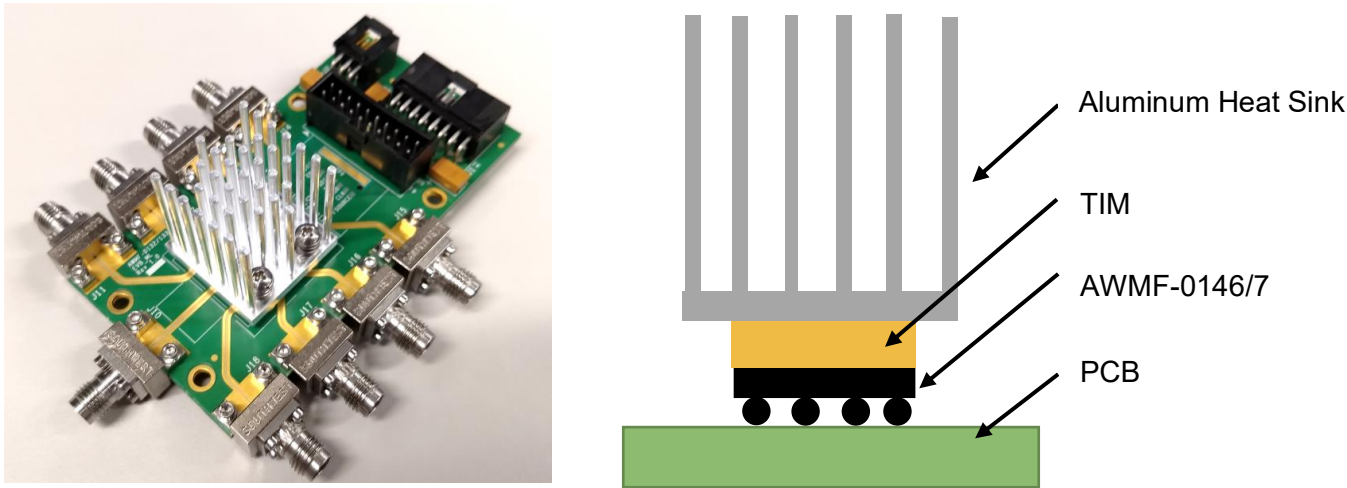


6.1 Attach 50 ohm Loads to all of the Unused RF Test Ports



Note: Board uses 2.92mm connectors

6.2 Ensure Heat Sink Is Attached



The heat sink provided with the Development Kit is required to achieve documented performance.

Heat Sink Details:

Manufacturer	Cool Innovations
Part Number	3-101011US74480
Material	Aluminum
Note	Anokiwave added the spacer PN: 952-1559 to ensure solid mechanical connection between the Cool Innovations Heat Sink and the PCB. This prevents damage to the AWMF-0146/7.

Example images of Anokiwave heat sink spacer:



TIM (Thermal Interface Material) Details:

Manufacturer	Dexerials
Part Number	EX20100C7

For detail regarding heat sink requirements for your application, please contact the factory.

Note: Over tightening of the heat sink can cause damage to the IC. Contact factory for assistance.

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6.4 Safe DC Power On

To make sure your test board is safely connected with no shorting, follow these steps to limit the current to your board:

1. Connect VDIG to its own 1.2V power supply per Section 6.3. Set supply DC current limit to 200mA max. Leave power supply disabled.
2. Connect VXX to its own 1.2V power supply per Section 6.3. Set supply DC current limit to 200mA max. Leave power supply disabled.
3. Connect VDD to its own 1.2V power supply per Section 6.3. Set supply DC current limit to 200mA max. Leave power supply disabled.
4. Connect the DC power cable to the evaluation board. The connector is keyed and can only be inserted in one orientation.
5. Enable the DC power supplies.
6. Ensure DC current consumption matches the following for each device:
 - a. AWMF-0146
 - i. ~ 3mA for VDIG supply
 - ii. <2mA for VXX supply
 - iii. <2mA for VDD supply
 - b. AWMF-0147
 - i. ~ 3mA for VDIG supply
 - ii. <2mA for VXX supply
 - iii. ~2mA for VDD supply
7. If the current in Step 6 is correct, disable the power supply, readjust your DC current limit to 1A for VDIG, VXX and VDD supplies
8. If the current is NOT correct in Step 6, disable the power supply and check connections. Contact the factory if error persists.

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6.5 Connect SPI Communications Cable

1. Connect the Samtec high speed SPI communication cable to connector on the back side of the test board, as shown below:



2. Connect the other end of the SPI cable to the Anokiwave SPI Interposer Board J3 connector.
3. Connect the Anokiwave SPI Interposer Board J1 40-pin connector to the NI USB-8452 SPI device.



7 SOFTWARE CONTROL PANEL

AWMF-0146/0147 Control Interface v1.1

Main

Mem Addr

ReadMems

Mem Load

Read/Write

Config

Element Gain/Phase Control

Q1

Q2

Q3

Q4

Amp

Pha

Amp

Pha

Amp

Pha

Amp

Pha

0

0

0

0

0

0

0

0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Dis Q1a

Dis Q2a

Dis Q3a

Dis Q4a

--

--

--

--

B

0

0

0

0

0

0

0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Dis Q1b

Dis Q2b

Dis Q3b

Dis Q4b

--

--

--

--

3dB Eq Q1

3dB Eq Q2

3dB Eq Q3

3dB Eq Q4

RFIC Config (MODE)

LDO Output

0-1.00

SDO Del

0

ADC Done

Double Buff

SPI RF_EN

0-disabled

SDO Edge

Rise

Fast Serial

Fast turn on

Telemetry

0-TEL_PDET_TEMP

LDB Enabled

RFIC RST

Common Atten

COM ATT

00 - 0 dB

BW/Memory Management

PHA from FBS

Enable FBS 1

GAIN from TDBS

TCOMP from Memory

Power Detector

PDET BW

0

☒ PDET ON in SBY

RFIC Status

Tdet

--

Prod ID

--

Prod Vers

--

ANOKI WAVE

mmW solutions. Enabling a new world

MODE: Online

A2

B2

B1

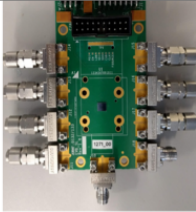
A1

A3

B3

B4

A4



Common (C)

FL - Write SPI

AWMF-0146

Initialize

TR Mode

00 - SBY

Write Mode

0 - Force REG0 write

Load State

Save State

Load bit->regs

Exit

Device connected

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