



AHEAD OF WHAT'S POSSIBLE™

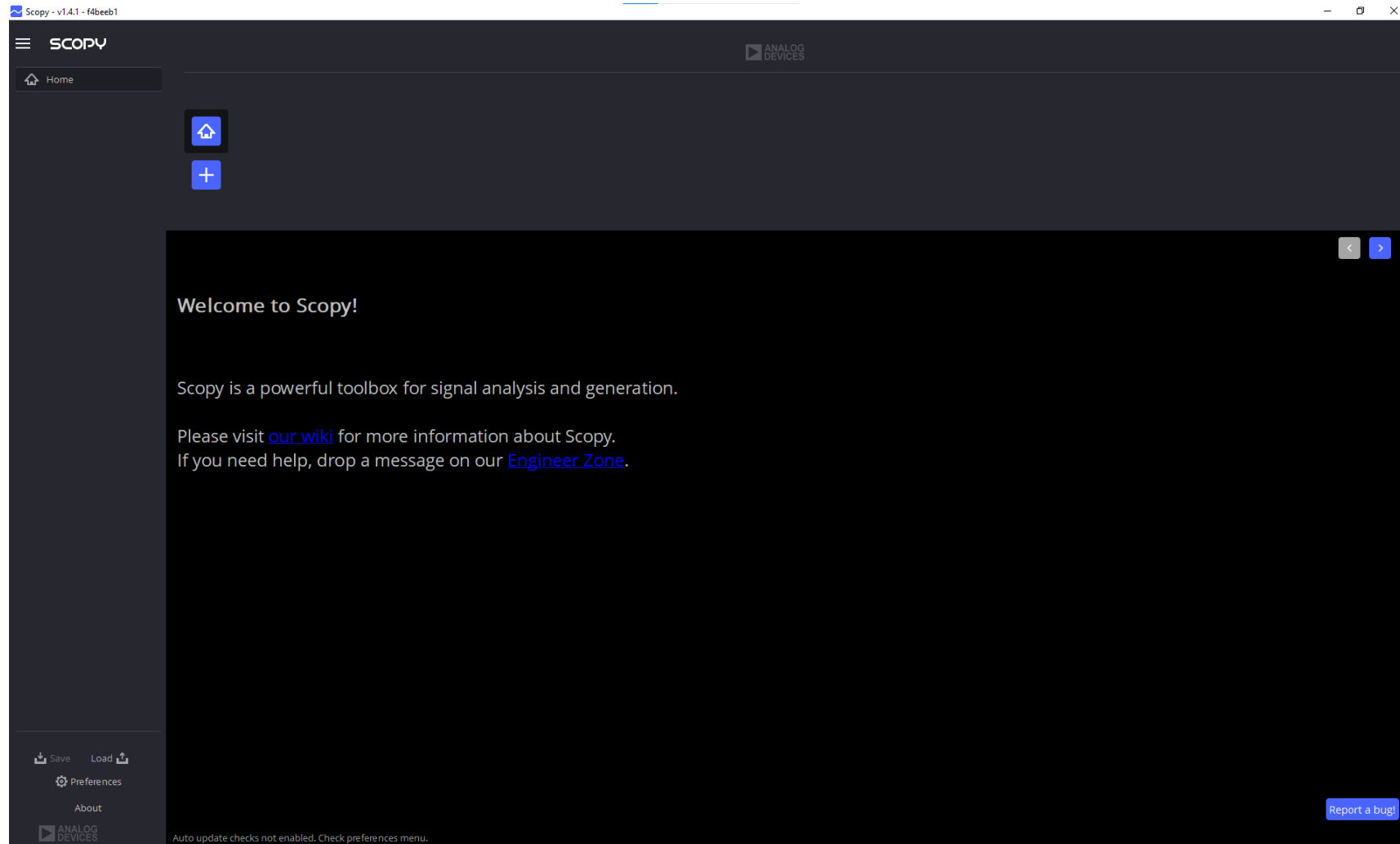
Stability Demo Testing Procedure

Ed Mullins, Principal Applications Engineer

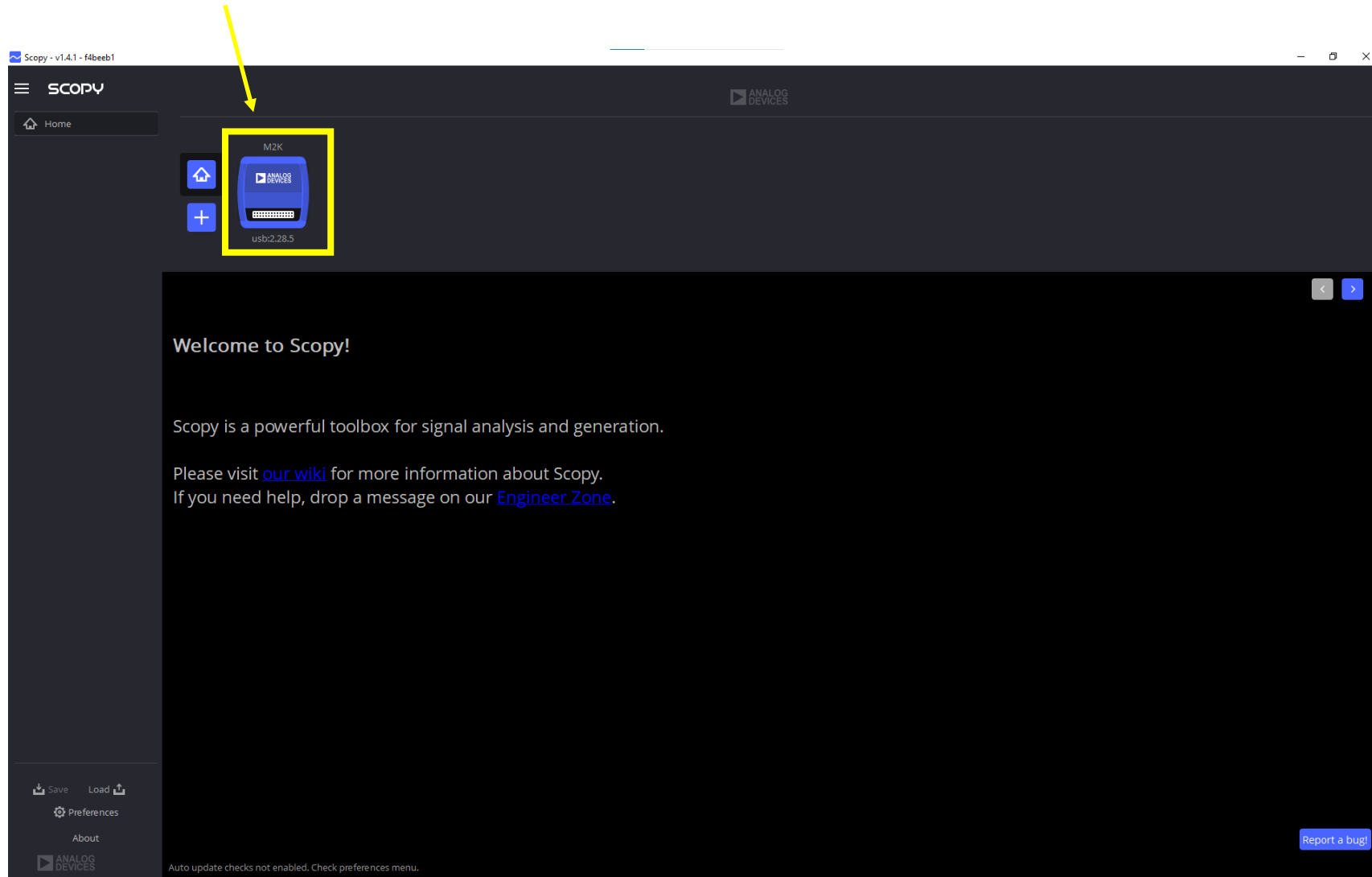
Physically Connect the ADALM2k to the Laptop



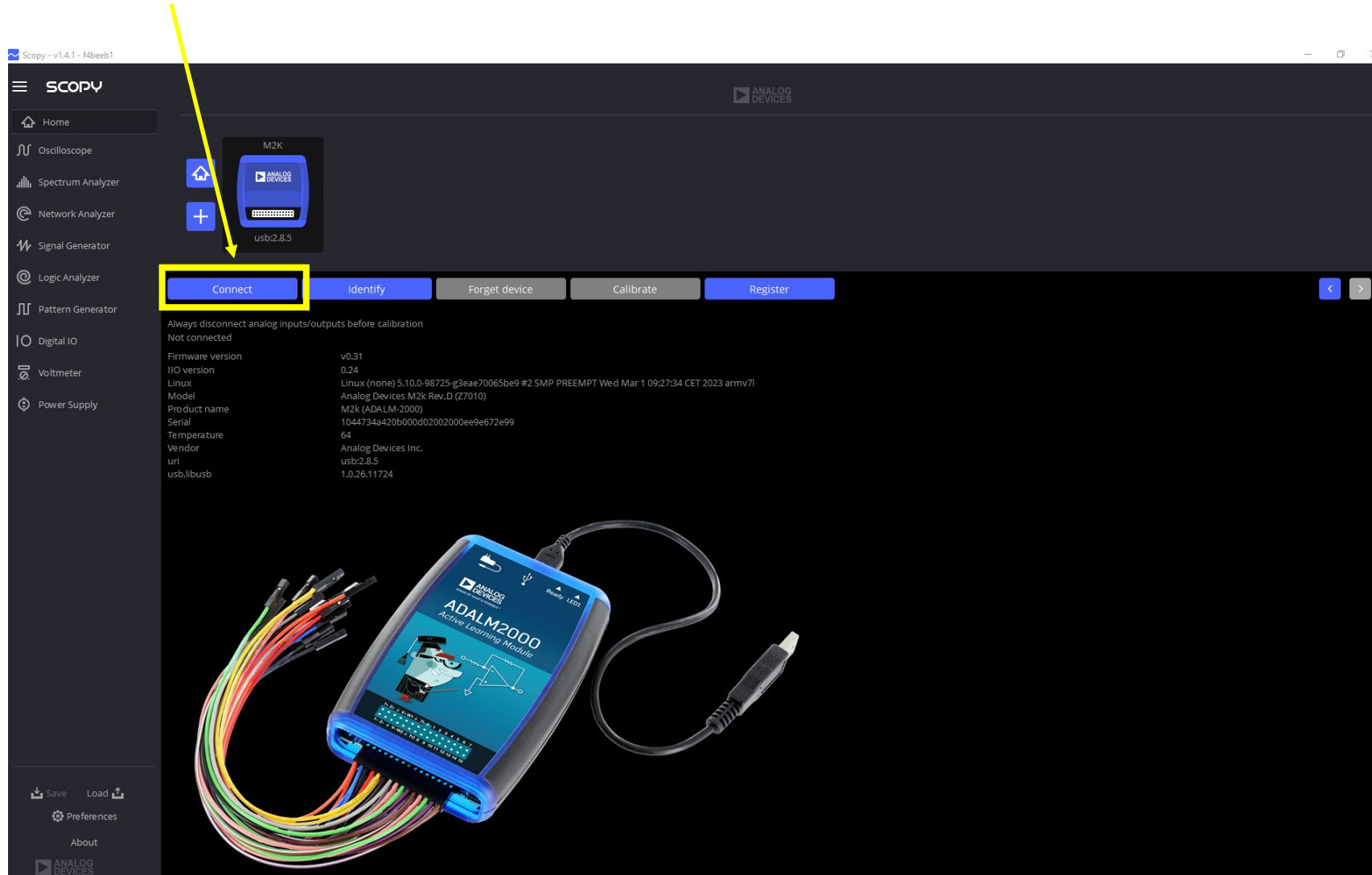
Launch the Scopy Software



Click on the Icon



Click "Connect"




The screenshot shows the SCOPY software interface. A yellow arrow points to the 'Connect' button, which is highlighted with a yellow box. The interface displays the following information:

Always disconnect analog inputs/outputs before calibration
Not connected

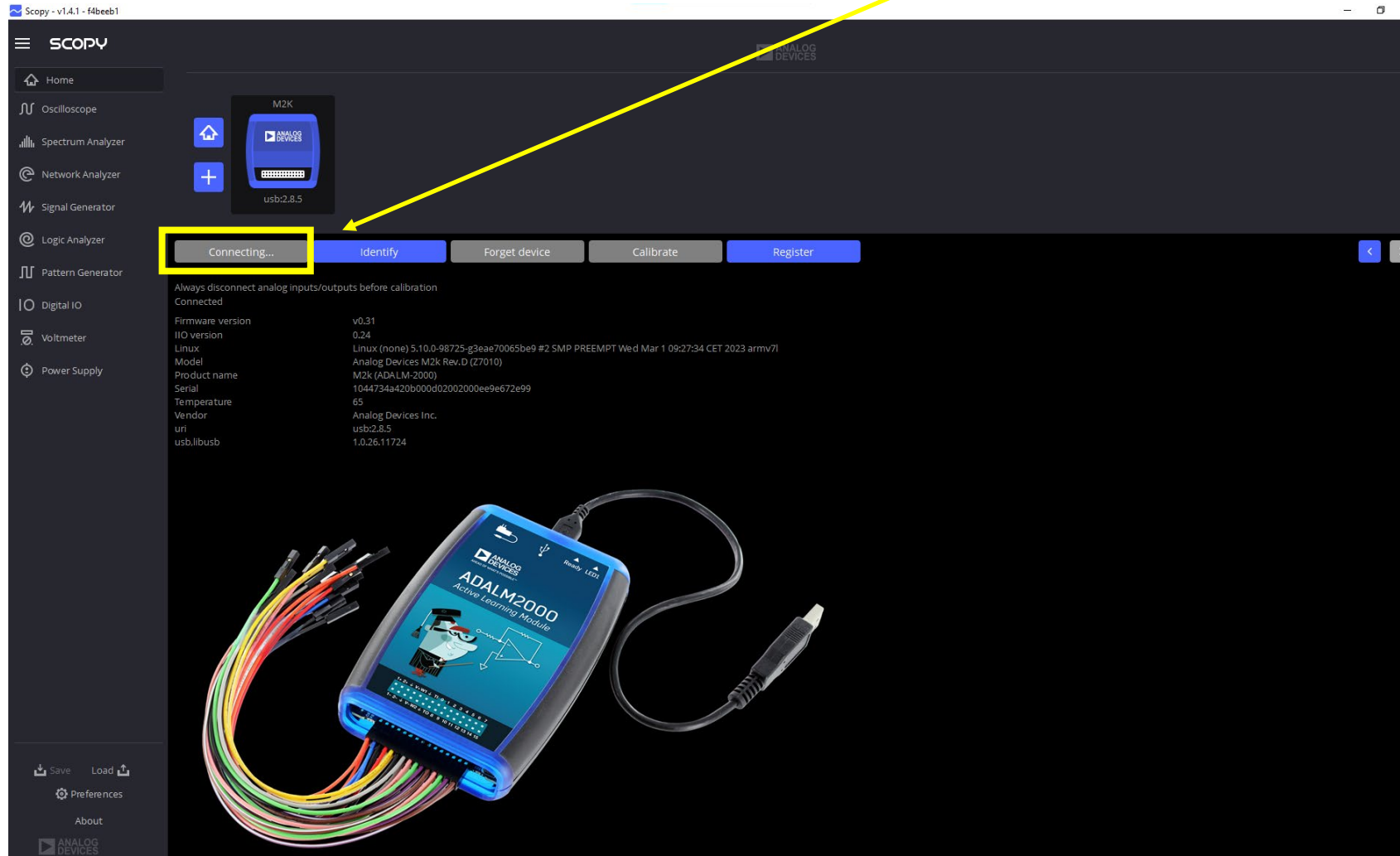
Firmware version	v0.31
I/O version	0.24
Linux	Linux (none) 5.10.0-98725-g3eae70065be9 #2 SMP PREEMPT Wed Mar 1 09:27:34 CET 2023 armv7l
Model	Analog Devices M2K Rev.D (Z7010)
Product name	M2K (ADALM-2000)
Serial	1044734a420b000d02002000ee9e672e99
Temperature	64
Vendor	Analog Devices Inc.
uri	usb2.8.5
usb.lbusb	1.0.26.11724

The interface also shows a list of tools on the left: Home, Oscilloscope, Spectrum Analyzer, Network Analyzer, Signal Generator, Logic Analyzer, Pattern Generator, Digital I/O, Voltmeter, and Power Supply. At the bottom, there are buttons for Save, Load, Preferences, and About.



The image shows the ADALM2000 Active Learning Module, a blue and black device with a USB cable and a bundle of multi-colored cables attached. The device has a screen displaying the Analog Devices logo and the text 'ADALM2000 Active Learning Module'.

The ADALM2k will Begin the Connection Process



SCOPY - v1.4.1 - f4bbeb1

Home

Oscilloscope

Spectrum Analyzer

Network Analyzer

Signal Generator

Logic Analyzer

Pattern Generator

Digital IO

Voltmeter

Power Supply

Save Load

Preferences

About

M2K

usb:2.8.5

Connecting... Identify Forget device Calibrate Register

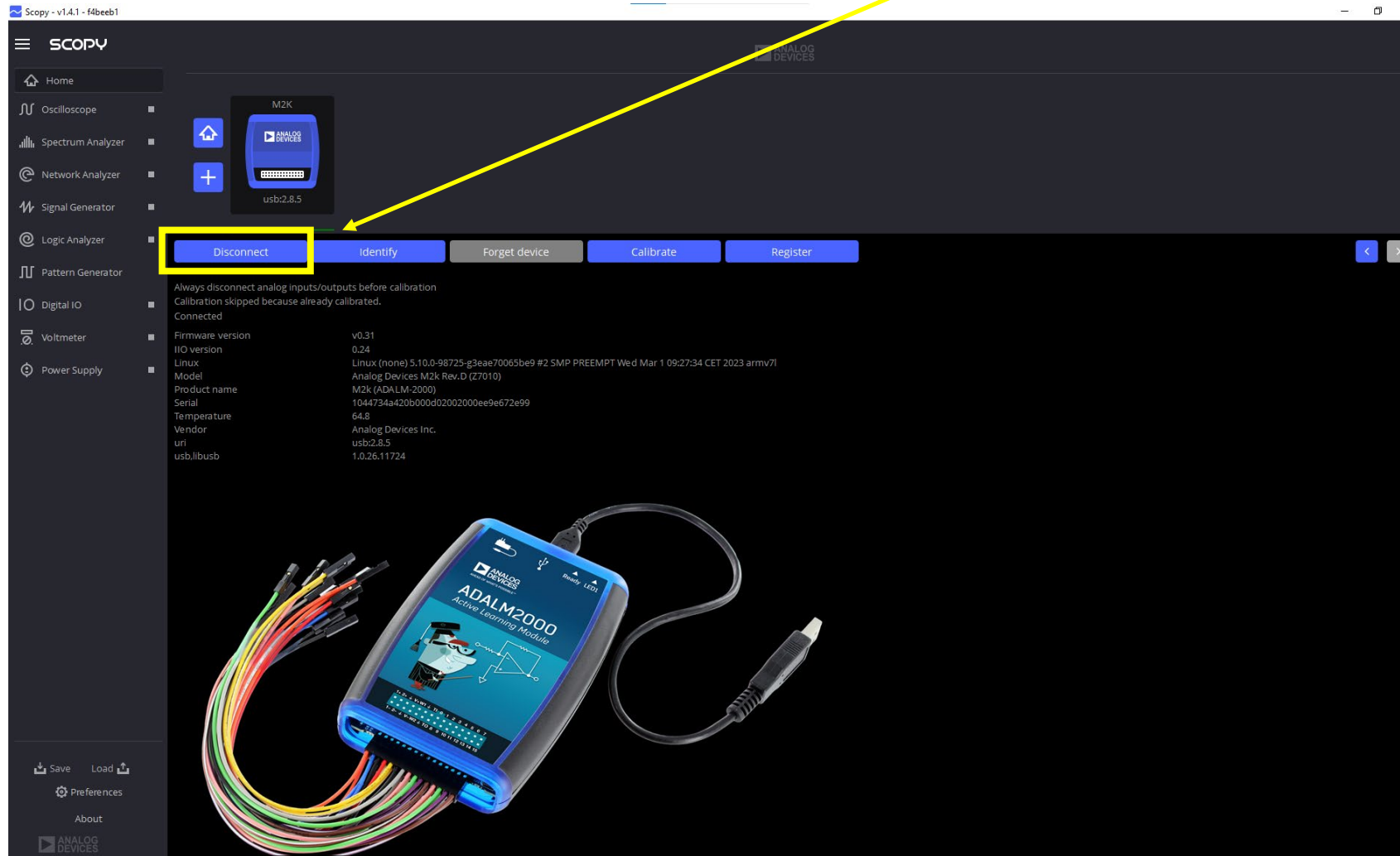
Always disconnect analog inputs/outputs before calibration

Connected

Firmware version	v0.31
IIO version	0.24
Linux	Linux (none) 5.10.0-98725-g3eae70065be9 #2 SMP PREEMPT Wed Mar 1 09:27:34 CET 2023 armv7l
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Temperature	65
Vendor	Analog Devices Inc.
uri	usb:2.8.5
usb.linux	1.0.26.11724

ADALM2000
Active Learning Module

Successful Connection Looks Like This



The screenshot shows the SCOPY software interface with the following elements:

- Left Sidebar:** Home, Oscilloscope, Spectrum Analyzer, Network Analyzer, Signal Generator, Logic Analyzer, Pattern Generator, Digital IO, Voltmeter, Power Supply.
- Top Bar:** SCOPY logo, ANALOG DEVICES logo.
- Device Card:** M2K, usb:2.8.5, with a home icon and a plus icon.
- Buttons:** Disconnect (highlighted with a yellow box), Identify, Forget device, Calibrate, Register.
- Status Messages:** "Always disconnect analog inputs/outputs before calibration", "Calibration skipped because already calibrated.", "Connected".
- Device Information Table:**

Firmware version	v0.31
IIO version	0.24
Linux	Linux (none) 5.10.0-98725-g3eae70065be9 #2 SMP PREEMPT Wed Mar 1 09:27:34 CET 2023 armv7l
Model	Analog Devices M2K Rev.D (Z7010)
Product name	M2k (ADALM-2000)
Serial	T044734a420b000d02002000ee9e672e99
Temperature	64.8
Vendor	Analog Devices Inc.
uri	usb:2.8.5
usb.libus	1.0.26.11724
- Bottom Left:** Save, Load, Preferences, About, ANALOG DEVICES logo.

Below the software interface is a photograph of the ADALM2000 Active Learning Module, a blue device with a screen and a keyboard, connected to a USB cable and a power cable. Multiple multi-colored cables are plugged into the front panel.

Physically Connect PCB to ADALM2k

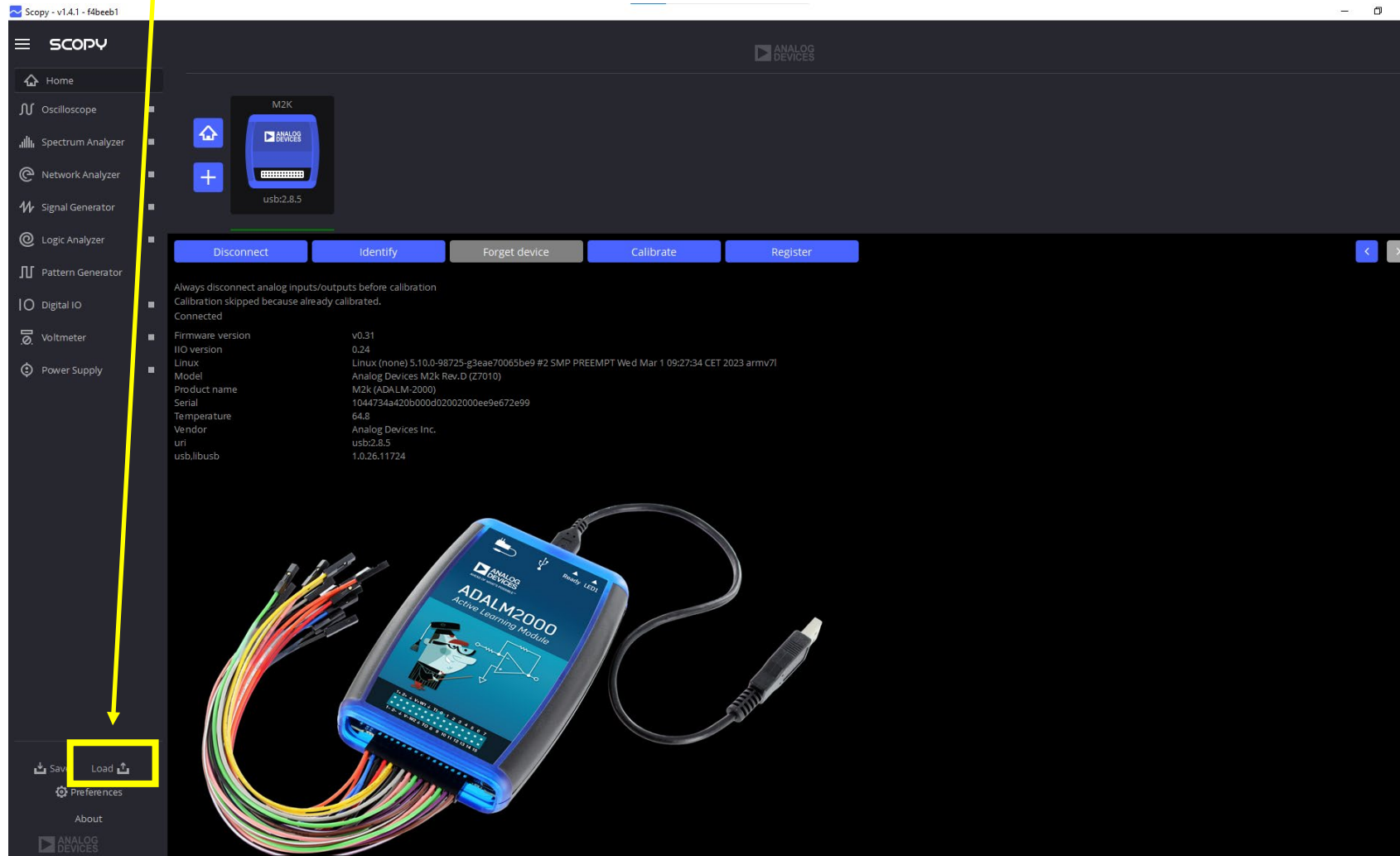


Top side of board has silk screen
labelled ADALM2000

Install LED carrier as shown

Carefully align pins and insert firmly

Load the Config Files

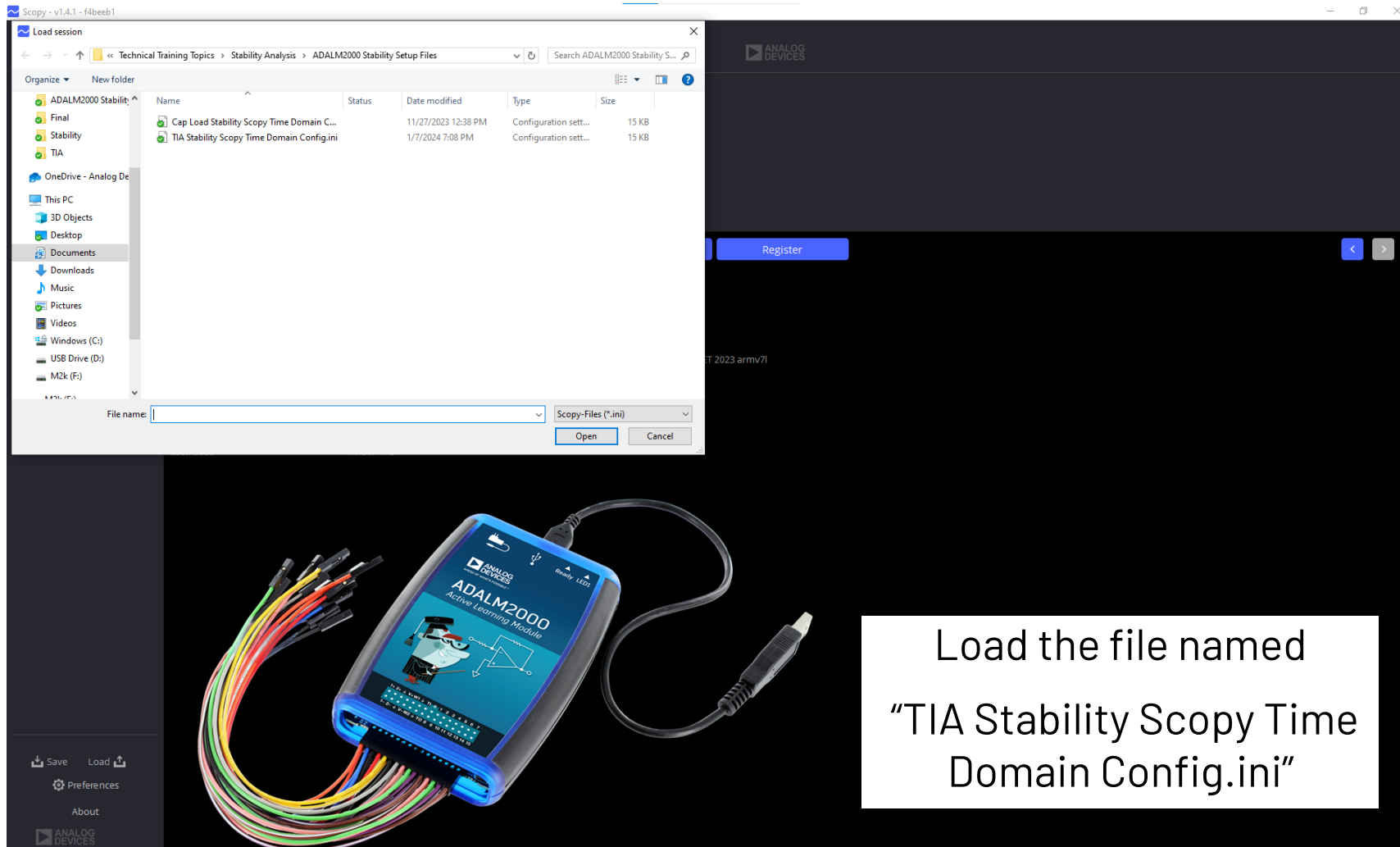


The screenshot shows the SCOPY software interface. On the left is a sidebar menu with options: Home, Oscilloscope, Spectrum Analyzer, Network Analyzer, Signal Generator, Logic Analyzer, Pattern Generator, Digital IO, Voltmeter, and Power Supply. At the bottom of the sidebar, the 'Load' button is highlighted with a yellow box and a yellow arrow pointing to it. The main window displays a device card for 'M2K' connected via 'usb:2.8.5'. Below the card are buttons for 'Disconnect', 'Identify', 'Forget device', 'Calibrate', and 'Register'. A status message reads: 'Always disconnect analog inputs/outputs before calibration. Calibration skipped because already calibrated. Connected'. Below this is a table of device details:

Firmware version	v0.31
IIO version	0.24
Linux	Linux (none) 5.10.0-98725-g3eae70065be9 #2 SMP PREEMPT Wed Mar 1 09:27:34 CET 2023 armv7l
Model	Analog Devices M2K Rev.D (Z7010)
Product name	M2k (ADALM-2000)
Serial	T044734a420b000d02002000ee9e672e99
Temperature	64.8
Vendor	Analog Devices Inc.
uri	usb:2.8.5
usb.libus	1.0.26.11724

At the bottom of the main window, there is a photograph of the ADALM2000 Active Learning Module hardware, which is a blue USB device with a multi-pin connector and a USB cable.

Navigate to the Config File Location



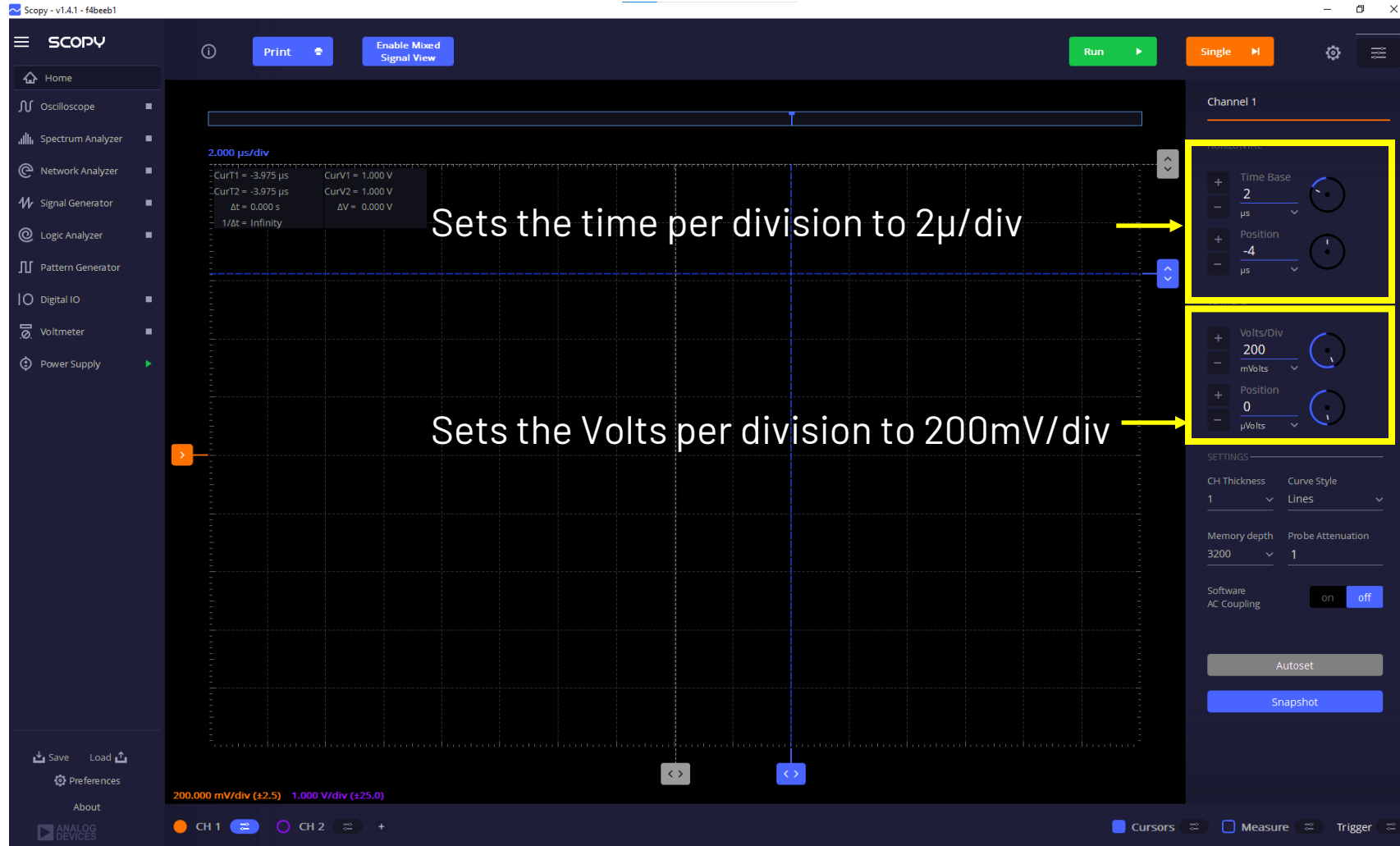
The image shows a Windows File Explorer window titled "Scopy - v1.4.1 - f4beeb1" with the address bar set to "Technical Training Topics > Stability Analysis > ADALM2000 Stability Setup Files". The file list contains two files:

Name	Status	Date modified	Type	Size
Cap Load Stability Scopy Time Domain C...		11/27/2023 12:38 PM	Configuration sett...	15 KB
TIA Stability Scopy Time Domain Config.ini		1/7/2024 7:08 PM	Configuration sett...	15 KB

The software interface in the background features a "Register" button and a hardware device, the ADALM2000 Active Learning Module, which is a blue and black device with a screen and multiple colored cables connected to its ports.

Load the file named
"TIA Stability Scopy Time
Domain Config.ini"

The O-Scope Will be Configured as Shown



SCOPE - v1.4.1 - f4beeb1

Print Enable Mixed Signal View Run Single

Channel 1

2.000 $\mu\text{s}/\text{div}$

CurT1 = -3.975 μs CurV1 = 1.000 V
CurT2 = -3.975 μs CurV2 = 1.000 V
 $\Delta t = 0.000$ s $\Delta V = 0.000$ V
1/ $\Delta t = \text{Infinity}$

Sets the time per division to $2\mu/\text{div}$

Sets the Volts per division to $200\text{mV}/\text{div}$

Channel 1 Settings:

- Time Base: 2 μs
- Position: -4 μs
- Volts/Div: 200 mVolts
- Position: 0 μVolts

SETTINGS

- CH Thickness: 1
- Curve Style: Lines
- Memory depth: 3200
- Probe Attenuation: 1
- Software AC Coupling: on/off

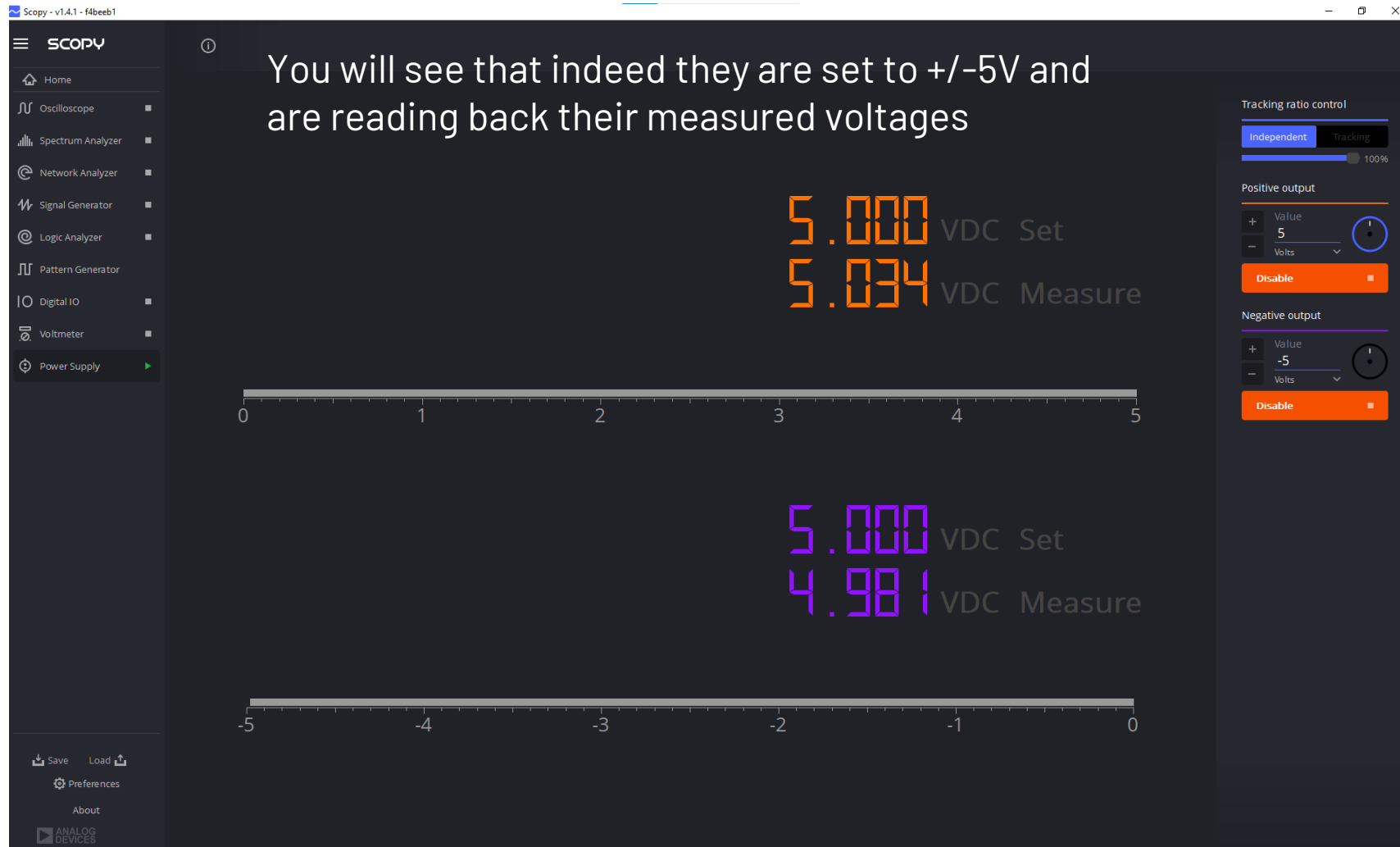
Autoset Snapshot

200.000 mV/div (± 2.5) 1.000 V/div (± 25.0)

CH 1 CH 2

Cursors Measure Trigger

If You Click on the Power Supply Label



The screenshot displays the SCOPY software interface for a power supply. The main display area shows two voltage readings: a setpoint of 5.000 VDC and a measured value of 5.034 VDC. Below this, a second setpoint of 5.000 VDC and a measured value of 4.981 VDC are shown. The interface includes a sidebar with navigation options like Home, Oscilloscope, Spectrum Analyzer, Network Analyzer, Signal Generator, Logic Analyzer, Pattern Generator, Digital IO, Voltmeter, and Power Supply. On the right, there are controls for Tracking ratio control (Independent/Tracking), Positive output (Value: 5 Volts), and Negative output (Value: -5 Volts). A horizontal scale at the bottom ranges from -5 to 0.

You will see that indeed they are set to +/-5V and are reading back their measured voltages

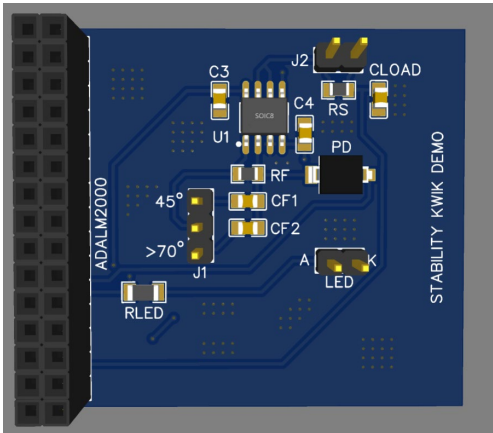
5.000 VDC Set
5.034 VDC Measure

5.000 VDC Set
4.981 VDC Measure

Remove the Jumper

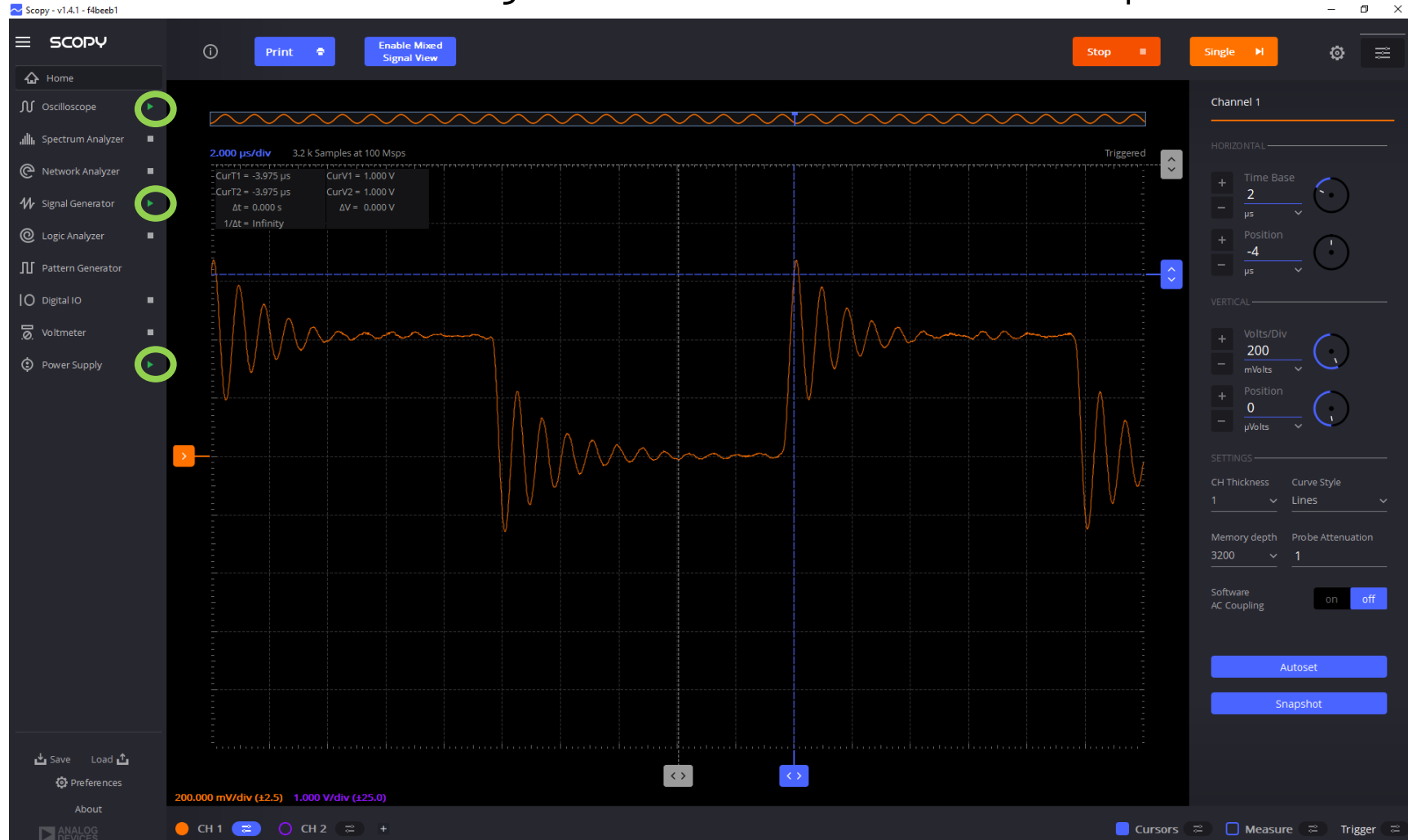
Click on triangle to enable these instruments

- Oscilloscope
- Signal Generator
- Power Supply



No jumper installed

Enable the Signal Generator and the Oscilloscope



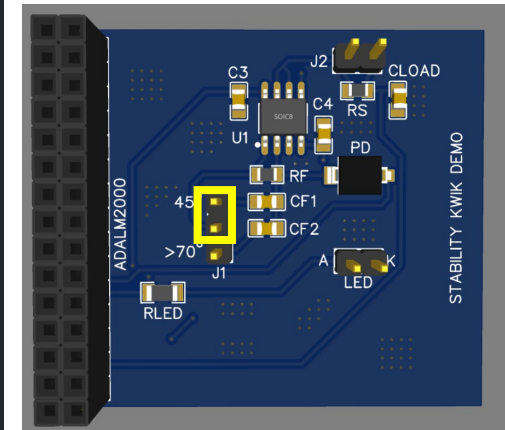
You should see a waveform that looks like this, and the LED should be visibly glowing **RED**

Place the Jumper for 45°

Adjust the trigger level as needed



Place jumper at J1
for 45°

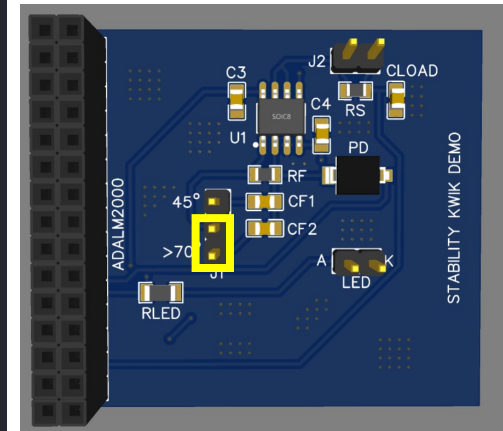


You should see a waveform that looks like this, and the LED should be visibly glowing **RED**

Place the Jumper for $>70^\circ$

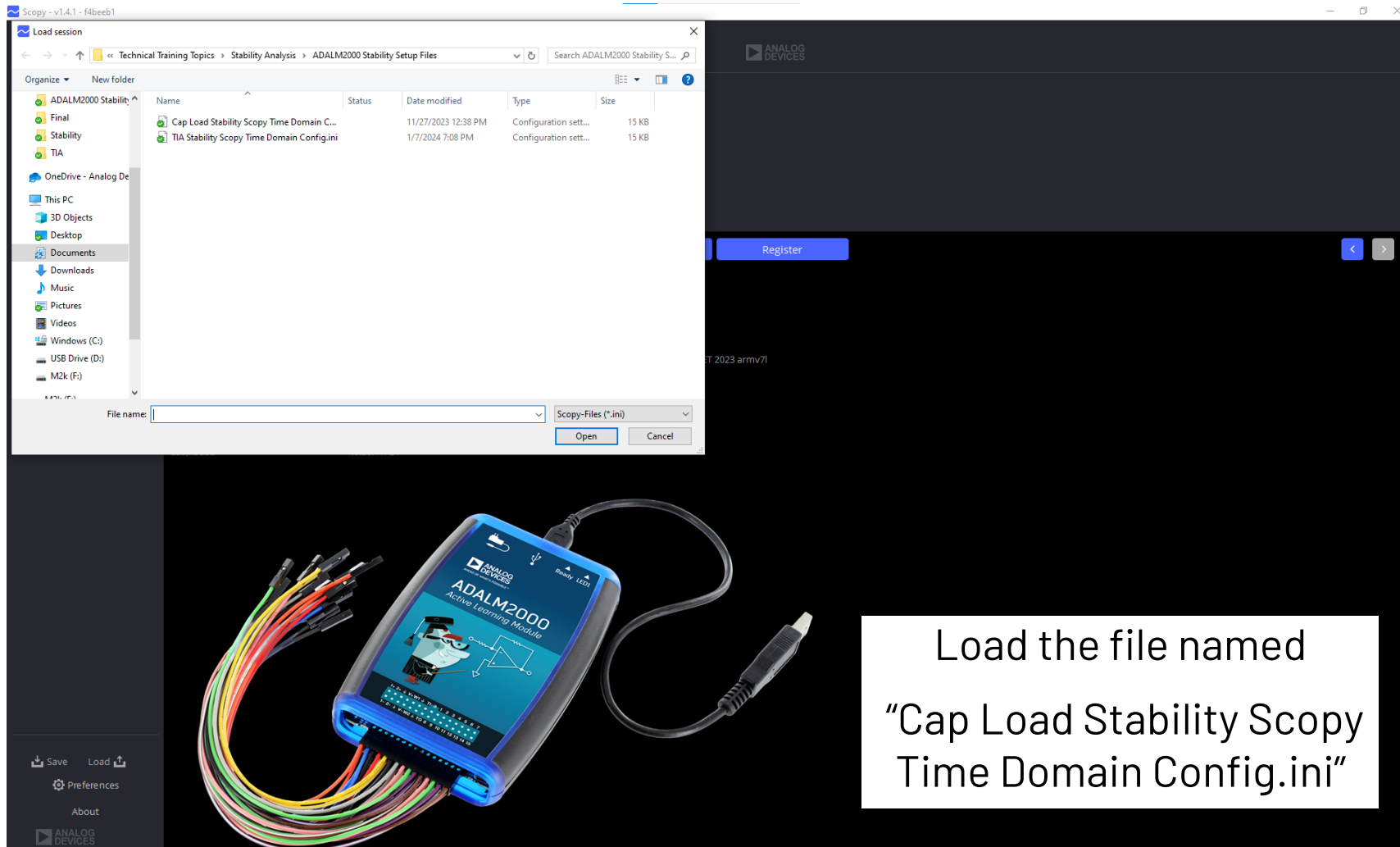


Place jumper at J1
for $>70^\circ$



You should see a waveform that looks like this, and the LED should be visibly glowing **RED**

Navigate to the Config File Location



The image shows a Windows File Explorer window titled "Scopy - v1.4.1 - f4beeb1" with the address bar set to "Technical Training Topics > Stability Analysis > ADALM2000 Stability Setup Files". The file list contains two files:

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TIA Stability Scopy Time Domain Config.ini		1/7/2024 7:08 PM	Configuration sett...	15 KB

The software interface in the background features a "Register" button and a hardware device, the ADALM2000 Active Learning Module, which is a blue and black device with a screen and multiple colored cables connected to its ports.

Load the file named
"Cap Load Stability Scopy
Time Domain Config.ini"

The 0-Scope Will be Configured as Shown

The screenshot displays the SCOPE software interface. The main window shows an oscilloscope with two channels. Channel 1 (orange) shows a sine wave, and Channel 2 (purple) shows a square wave. The time base is set to 1.000 $\mu\text{s}/\text{div}$ and the volts per division is set to 100 mV/div. The interface includes a sidebar with various analysis tools, a top toolbar with 'Print', 'Enable Mixed Signal View', 'Stop', and 'Single' buttons, and a right-hand panel for channel configuration. Two yellow boxes highlight the 'Time Base' and 'Volts/Div' settings in the Channel 2 configuration panel. Arrows point from text annotations to these settings.

1.000 $\mu\text{s}/\text{div}$ 1.6 k Samples at 100 Msps

Cur1 = 78.35 μs CurV1 = 1.000 V
Cur2 = -8.264 μs CurV2 = 1.000 V
 $\Delta t = 0.000$ s $\Delta V = 0.000$ V
1/ $\Delta t = \text{Infinity}$

Print Enable Mixed Signal View Stop Single

Channel 2

Time Base 1 μs Position -4 μs

Volts/Div 100 mVolts Position 0 μVolts

SETS the time per division to 1 $\mu\text{s}/\text{div}$

SETS the Volts per division to 100mV/div

200 mV/div (± 2.5) 100 mV/div (± 2.5)

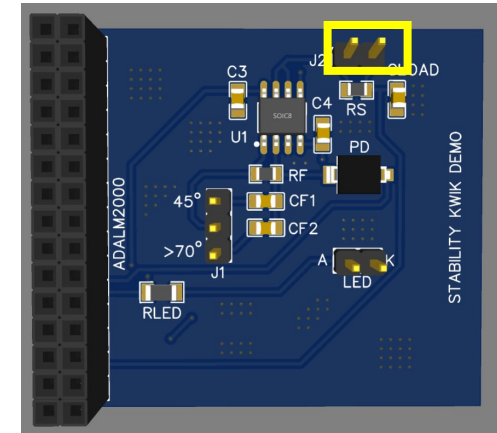
CH 1 CH 2

Cursors Measure Trigger

ADALM2k Results



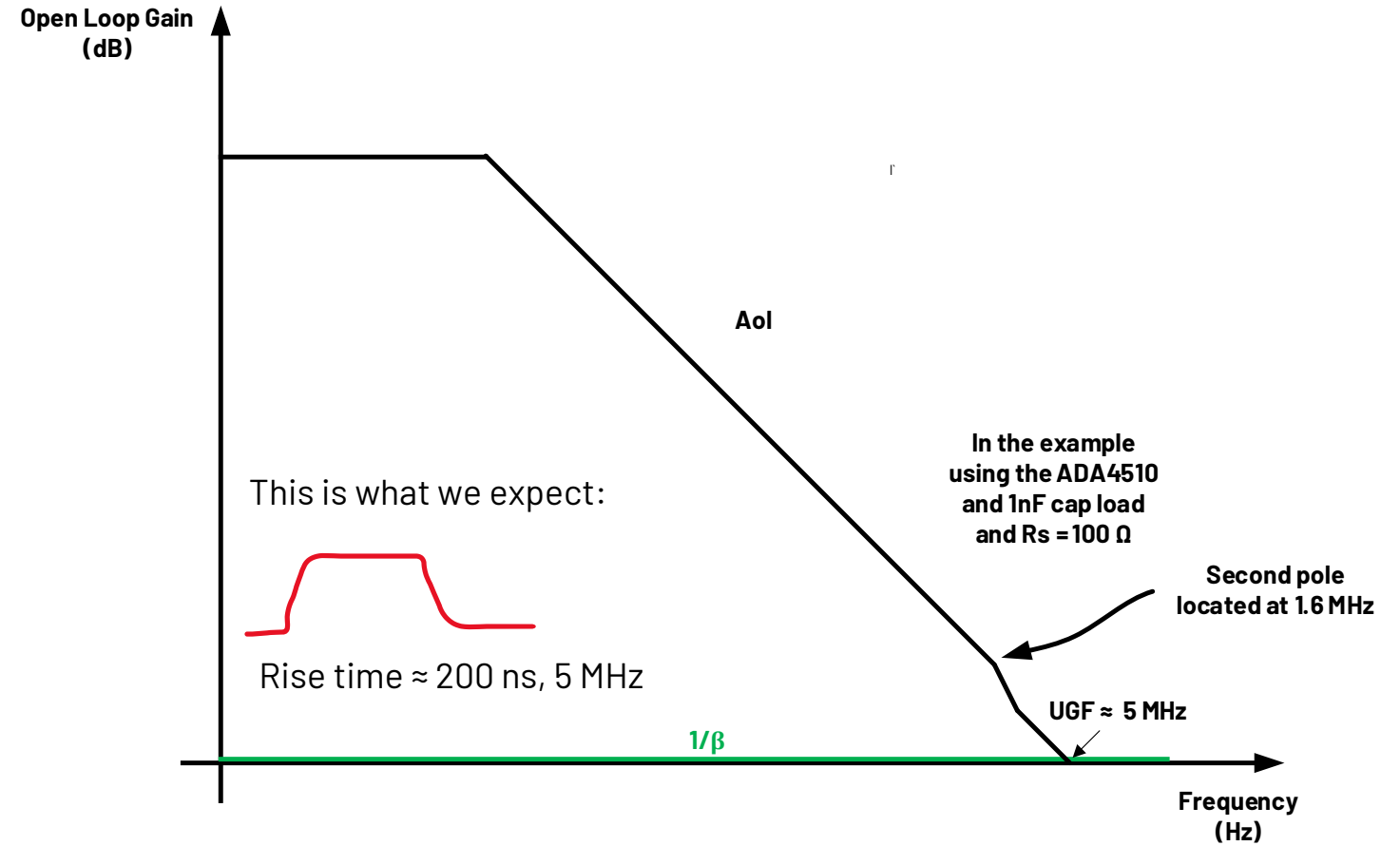
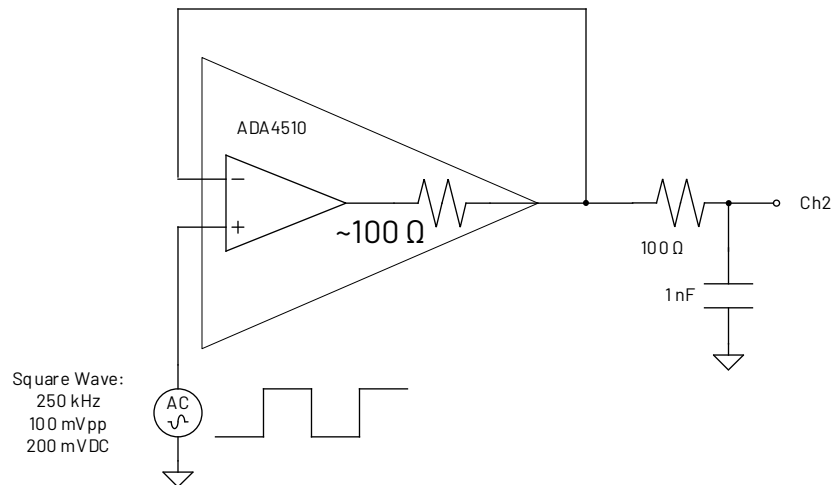
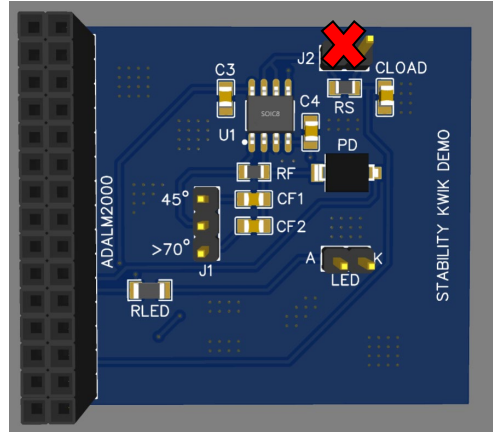
Place jumper at J2

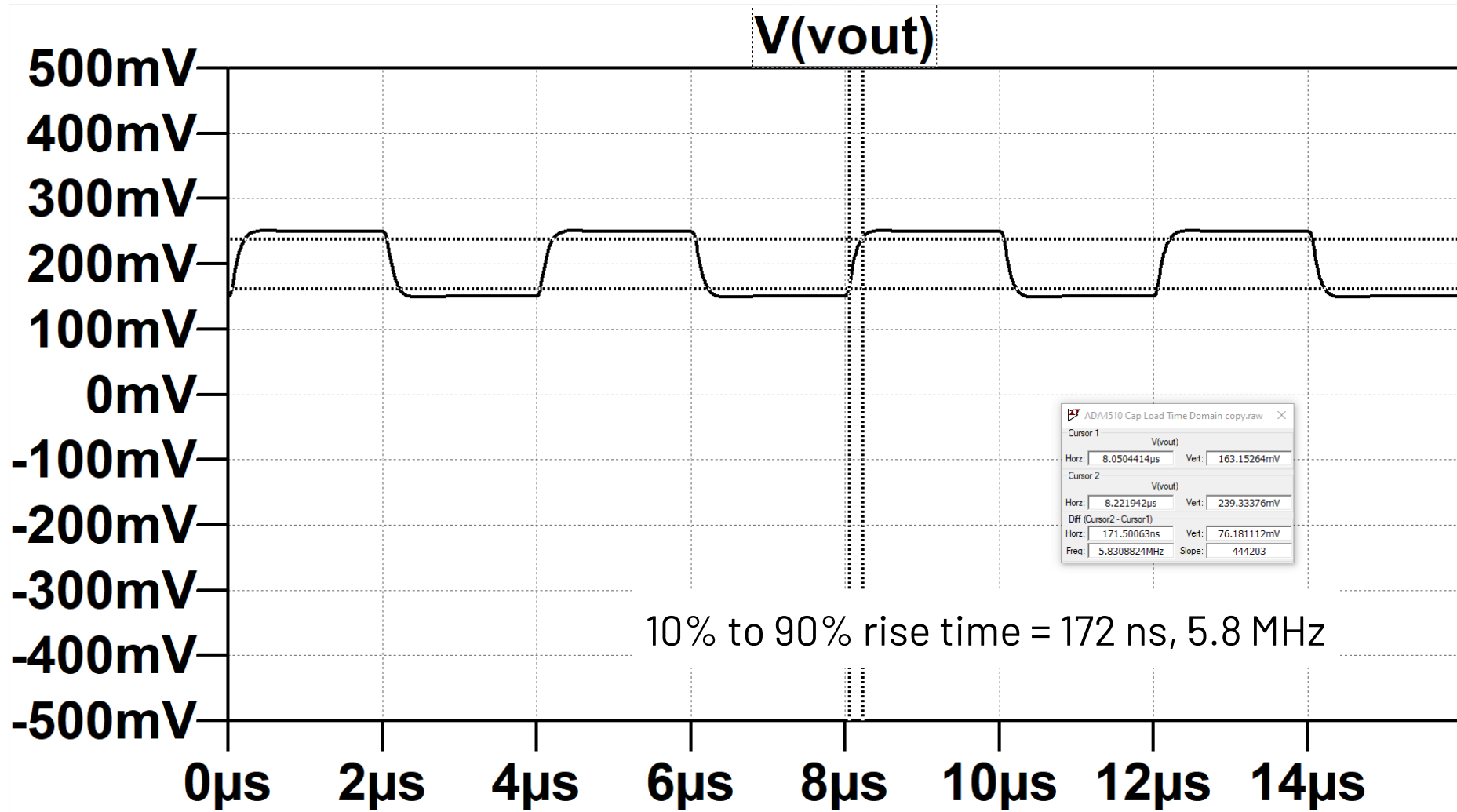


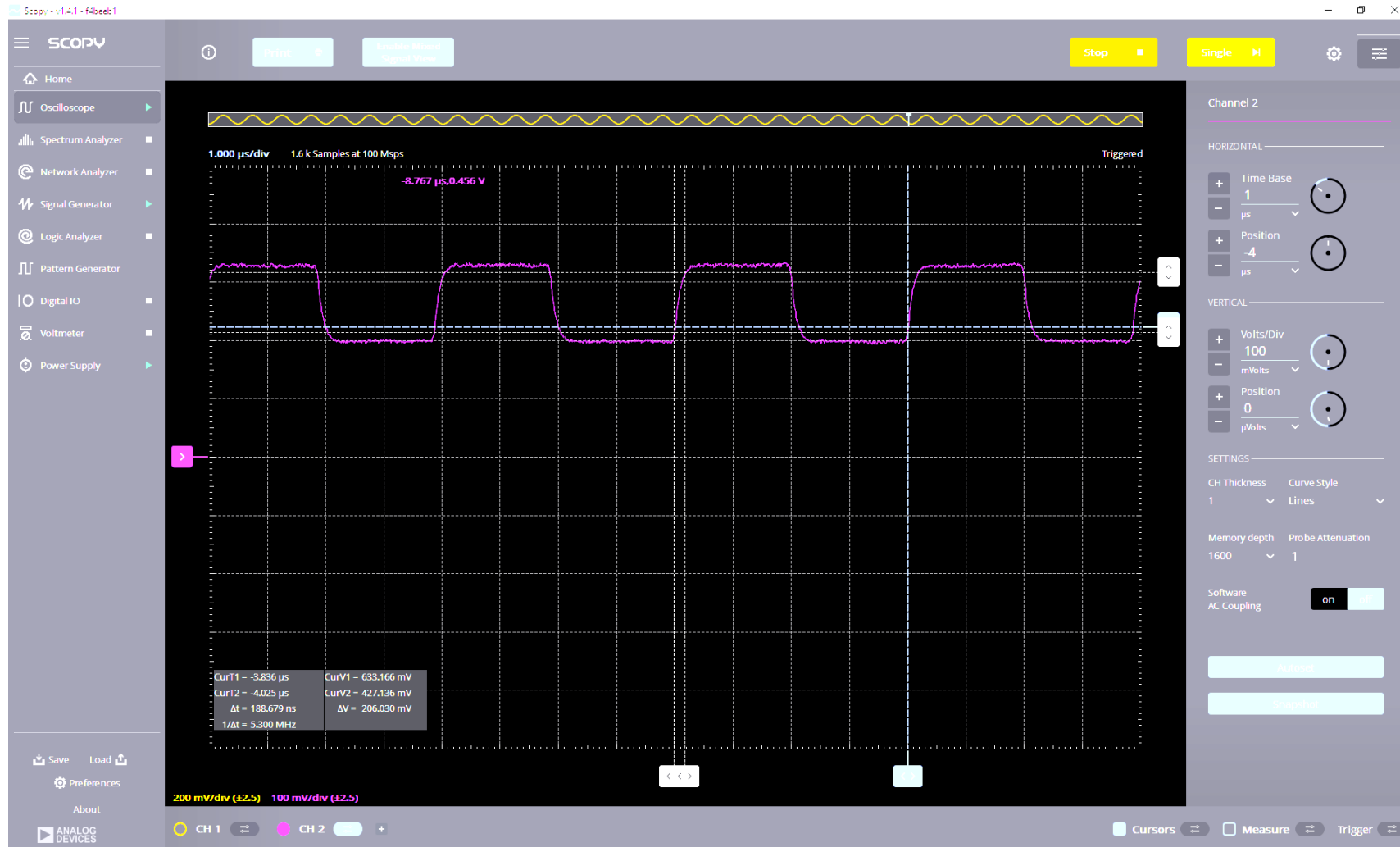
You should see a waveform that looks like this, and the LED should be off

Let's Configure the Hardware

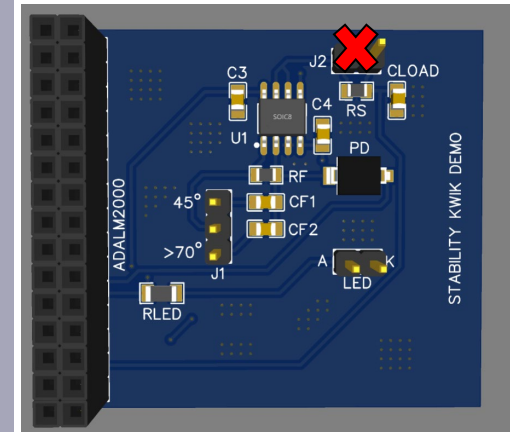
Remove jumper at J2







Remove jumper at J2



You should see a waveform that looks like this, and the LED should be off