

IN-HOUSE SOLAR SIMULATOR



STANDARD OPERATING PROCEDURES (SOPs) 2018



NCPRE CHARACTERIZATION LAB

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STANDARD OPERATIONAL PRINCIPLE

TURN ON Sequence:

1. Check whether the power supply cable is plugged in the switchboard and then turn the Extension switchboard ON.
2. Turn ON the power supply switch which is at the back side of the power supply. Confirm Cooling STARTS/RUNS appears, Click OK to confirm.



Fig 9: Power Supply Display

3. Turn on the fan by clicking "Fans On" on the touchscreen of the power supply.
4. Make sure the power should be 79% which is on the right side of the touchscreen to get 1000 W/m².
5. Wait for 1 minute after switching on the fan.
6. Turn On the lamp by clicking on "LAMP ON" button from the touchscreen. Wait for 20 minutes for lamp to stabilize.
7. By the time lamp stabilizes, turn on the "Keithley 2450 Source meter".
8. Turn on the PC.
9. Start the "KickStart" Software.

Making a New Recipe

1. Click on New tab. Give a file name of IV measurement.

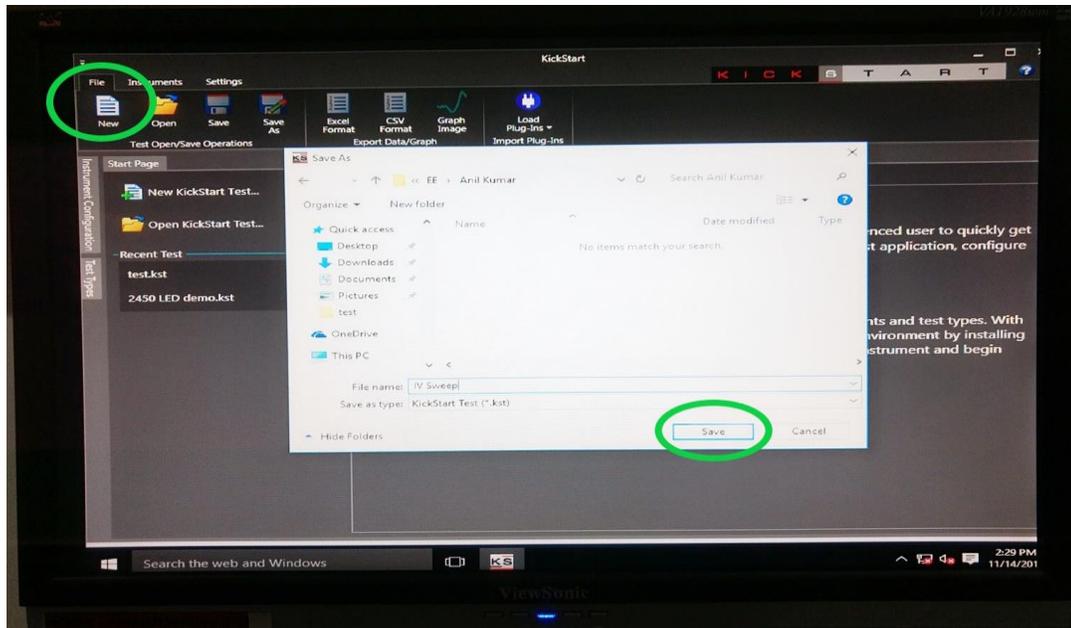


Fig 10: Making New Recipe

2. Wait for 30 seconds.
3. Click on Select Instrument on the bottom left side of the software. Right click on MODEL 2450 and ADD Instrument.

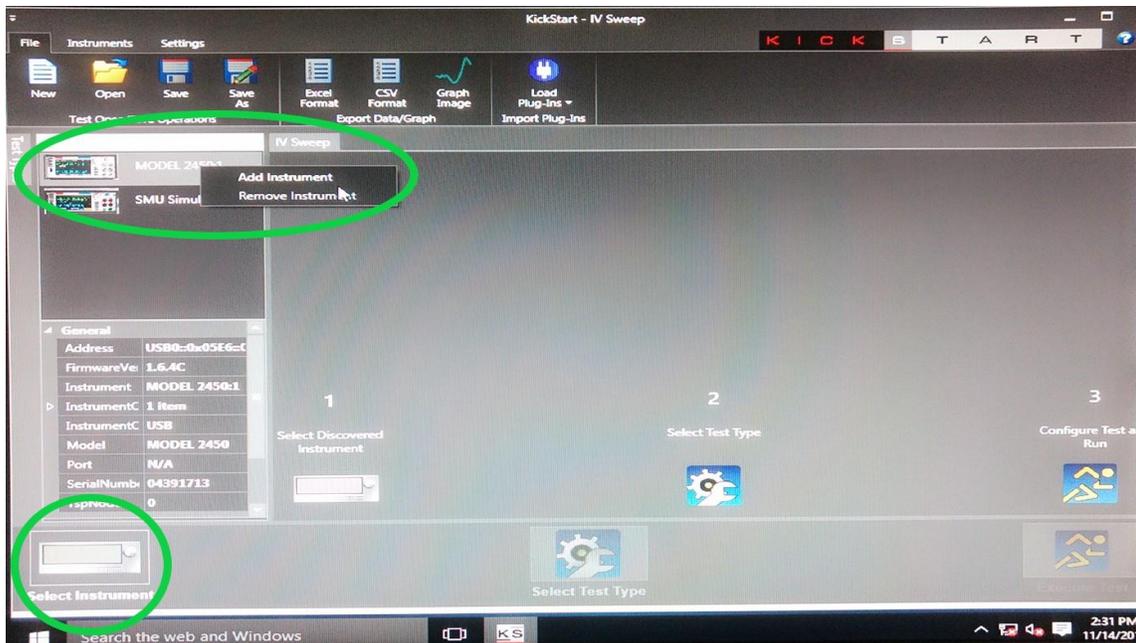
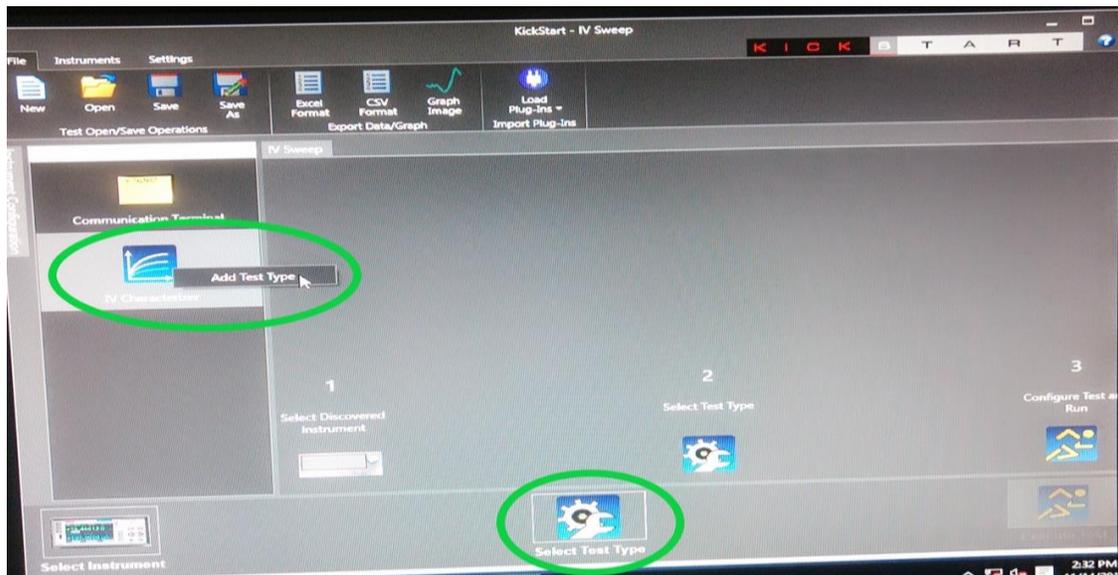


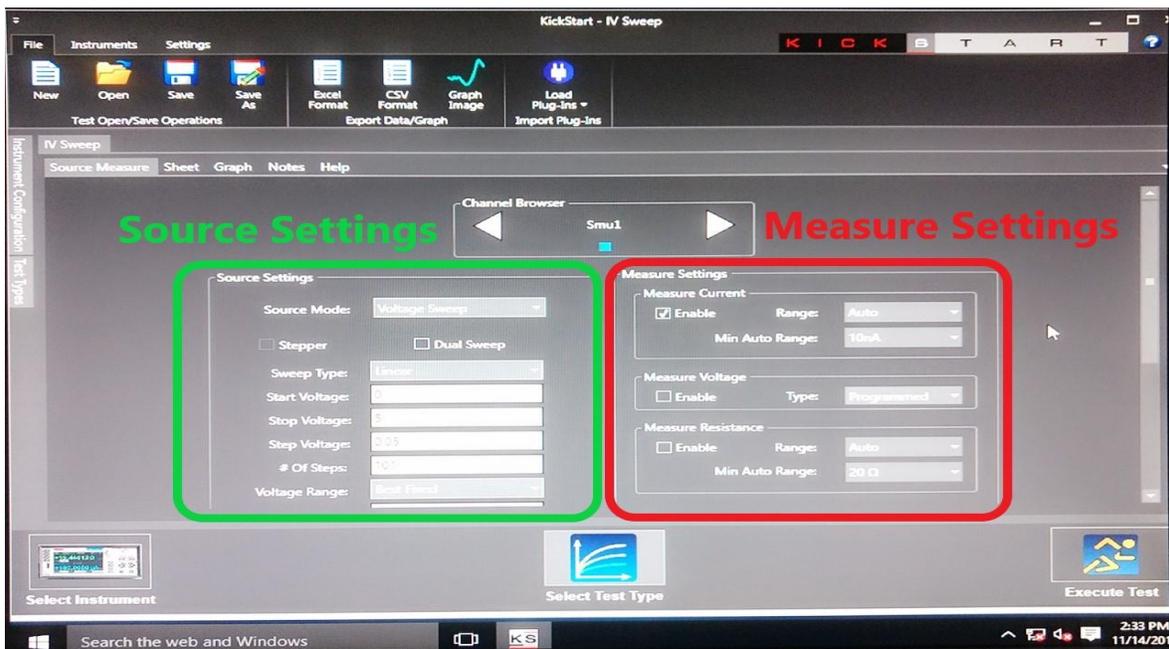
Fig 11: Selecting Keithley 2450

4. Click on "Select Test type" on bottom middle of the software. Right Click on "IV characterizer" and ADD Test Type.



5. Source Settings

- I. Select Source Mode : Voltage Sweep
- II. Select Sweep type Either Linear or Logarithmic.
- III. Select start voltage and stop voltage and no of steps.
- IV. Select Voltage Range as Best Fixed.
- V. Select the current Limit depending upon the solar cell.
- VI. Delay Seconds as 0.1.



6. Measure Settings

- I. Select Measure Current Enable, Select the of current (should be less than 100mA).

- II. Click on Measure Voltage Enable and Type Measured.
 - III. Measure Resistance check box should be unchecked.
 - IV. Check the Enable Timestamp check Box.
 - V. Advanced Configuration: Input Jacks should be Front.
 - VI. Sensing Mode as 4-Wire.
 - VII. Output OFF State as Normal.
7. Click on Graph tab on the top side. And Select the parameter to be shown in X and Y axis.
 8. Put the Sample on the chuck and start vacuum to hold the sample.
 9. Probe the Sample using micromanipulator.
 10. Press Execute Test to start the dark IV measurement
 11. Open the Shutter and press Execute Test to start lighted IV Measurement.
 12. Save the Data using either "Excel Format" or "CSV Format" from the menu in the software.
 13. Turn off the vacuum and take out the sample.

Turn Off Process

1. Turn off the lamp by pressing "LAMP OFF" from the touchscreen and wait for 20 minutes.
2. Close the Software and shut down the PC.
3. Turn off the fan by pressing "Fans Off" from the touchscreen of the power supply.
4. Switch off the power supply from the back side of the power supply.
5. Switch off the mains power supply.