



menlo**micro**

# MM5120EVK1/MM5140EVK1

Evaluation Kit Instructions

APN-0005

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## Introduction to the MM5120EVK1/MM5140EVK1

This document describes how to set up and use the MM5120 and MM5140 SP4T Switch Evaluation Kit (EVK). The EVK is intended for evaluation of MM5120/MM5140 RF performance such as insertion loss, return loss and isolation over frequency.

The EVK is shipped with the following material:

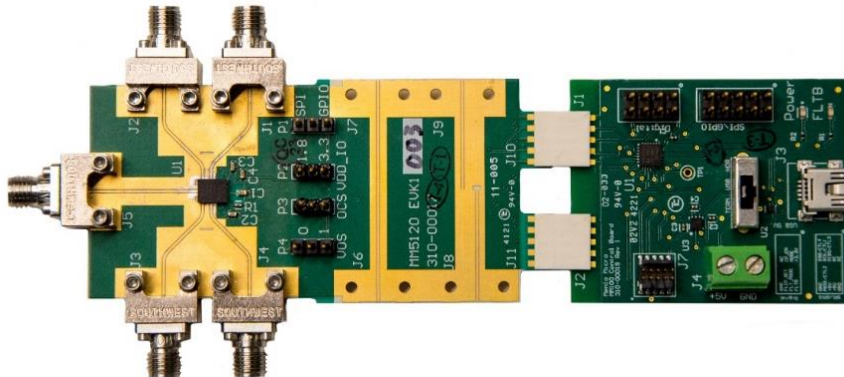
- MM5120/MM5140 RF board and Menlo Control Board, packaged in protective ESD bag.
- Mini-USB cable for controlling the board from a Windows based GUI program.
- Printed Documentation including MM5120/MM5140 Datasheet and Quick Start Guide (this document).
- Business card with QR code linked to Menlo Support Portal.
  - Request access/login to Menlo Support portal to download other resources and latest documentation.

## EVK Setup Procedure

1. Download and execute the Windows installer for the EVK Control Software from [menlomicro.com/download/evk-control-software-download](https://menlomicro.com/download/evk-control-software-download) (or scan QR code). Application is also available for download on the Menlo Support Portal.
2. In an ESD protected environment, open the ESD bag and take out the RF and control boards.
3. On the RF board, select SPI mode and 3.3V VDD\_IO using jumpers on P1 and P2, respectively as shown below:



4. Connect the RF board to the control board as shown below. **Do not connect the boards when the control board is powered.**



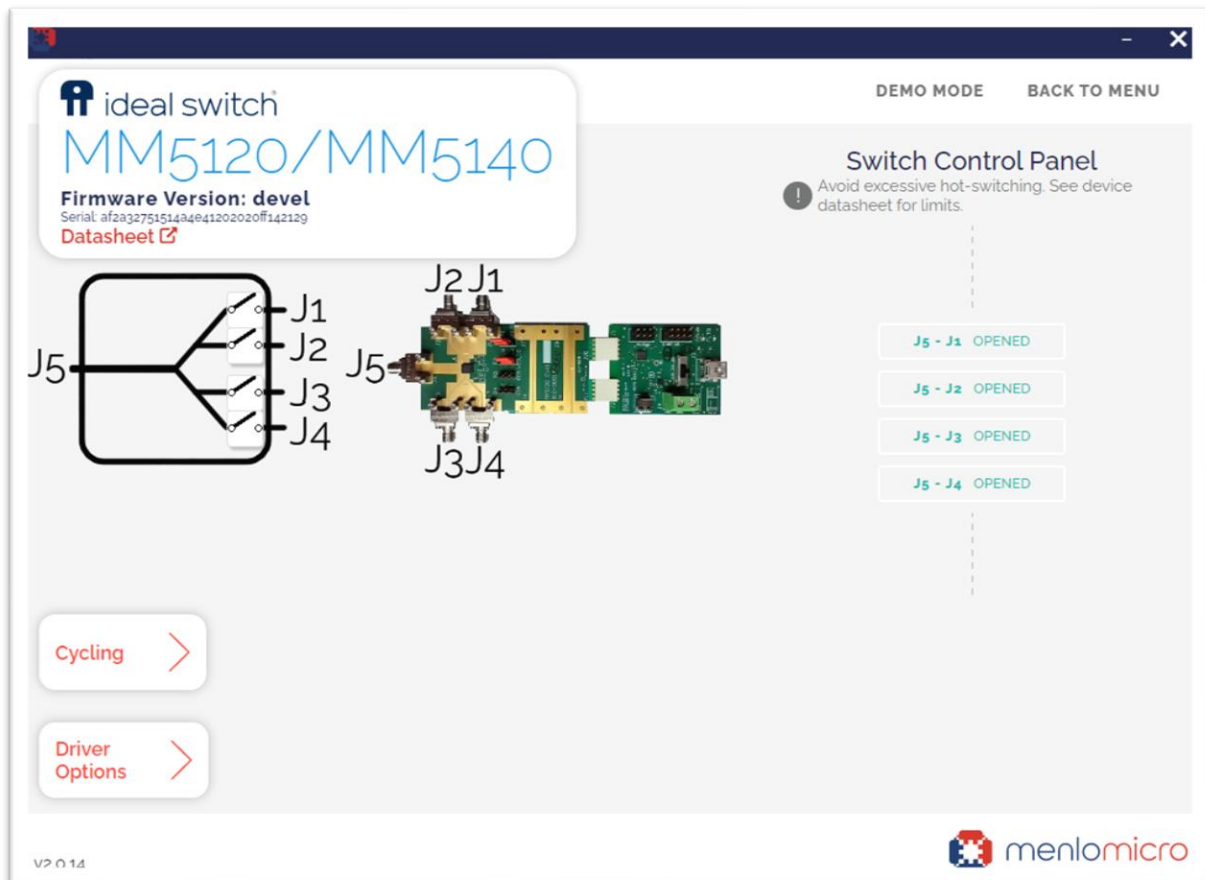
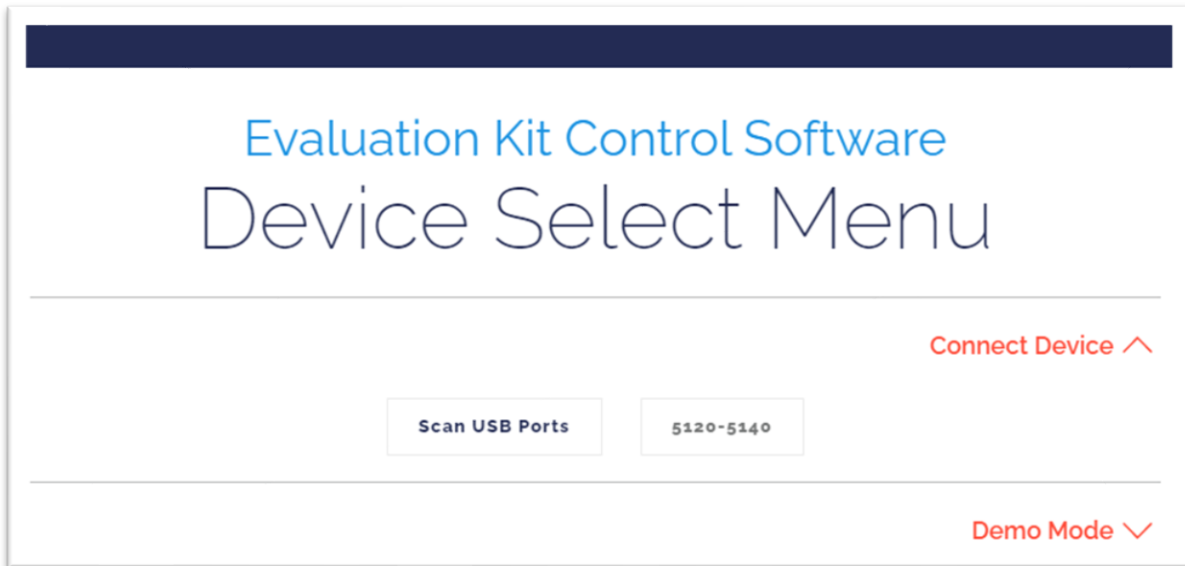
5. On the control board, switch the power selector switch to match where power will be supplied. Note: USB control can be used while supplying +5V to the screw terminal or header without risk of damage to the USB port.
  - If supplying +5V to the screw terminal (J4), select TERM (left).
  - If using +5V from the USB connector (J3), select USB (middle).
  - If supplying +5V to the SPI/GPIO header, select HDR (right).



6. If using an external voltage supply, supply +5V to the control board.
7. Connect a computer to the control board using a USB mini cable.



- Open the “Menlo Micro EVK Control” application, select “Scan USB Ports”, and open “5120-5140”. Observe the control panel displaying switch status and controls.

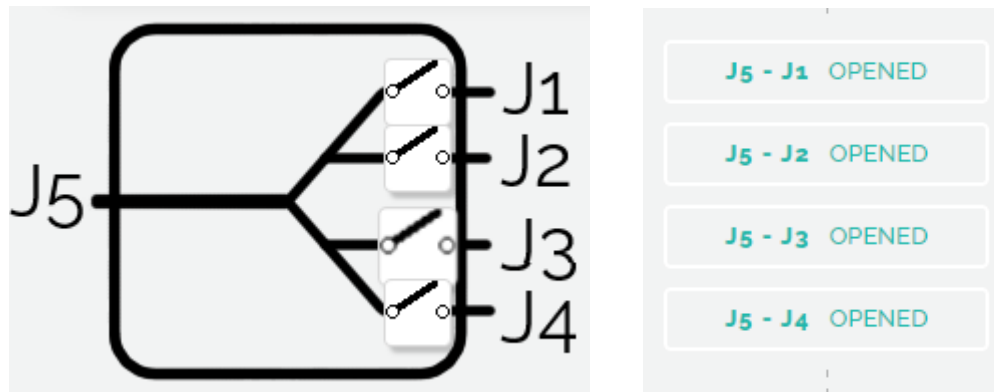




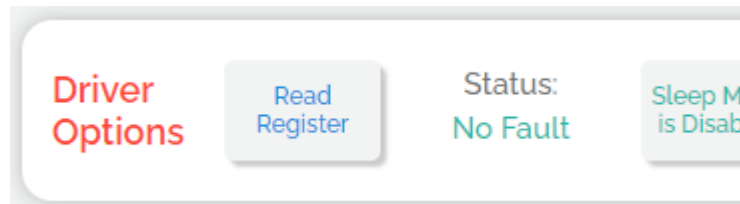
9. Enable the Charge Pump and disable Sleep Mode.



10. To close (enable) a switch, left click the channel in the block diagram or control panel. Left click again to open (disable) it.



11. To check for a fault, left click “Read Registers” and as shown below. Changing the switches or other settings will clear a fault. See the datasheet for more details.



12. To power down the EVK, turn off the +5V source (if using external voltage supply) and disconnect the USB mini cable. **Do not decouple the boards when the control board is powered.**

## Notes on Measurement Instrumentation

It is recommended to measure the evaluation board using a VNA.

During evaluation it is best practice to open or close the device with zero voltage across the terminals. It is possible to open or close switches with up to 0.5 V across the terminals without lifetime degradation. See datasheet for full hot switching specification details. Opening or closing the switch with a VNA sweep active is generally a safe practice.

**Note:** Even using a common digital multimeter to check the resistance can lead to device damage if the measurement is active during the actual state transition. Voltages between 3.0 V and 7.0 V from Multi-Meters (DMM) have been observed.

## Important Information

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