TI AWR2944EVM & DCA1000EVM hardware setup guide

The documentation of the AWR2944EVM gives incorrect information about the USB connections to the radar chip and and does not provide any information about the switches on the radar chip. This guide summarizes the required steps in terms of hardware connections and pin configuration to get the AWR2944EVM working with the DCA1000EVM. For the software tools (mmWaveStudio 3, FTDI drivers, Matlab Runtime 15 ; VC++ redistribuable 13 etc.), refer to the mmWaveStudio, DCA1000 and AWR2944 documentation).

A. Cables setup

1. **Cable joining both boards :** plug the SAMTEC ribbon cable into J7 of the AWR2944 (DEBUG_CONN) and into J3 on the DCA1000 (60_PIN_RADAR_CONN)
2. **Cables on the AWR2944 :**
   a. 12V- >2.5A power input on J12 (12V, >2.5A)
   b. Micro-USB on J10 (FTDI_USB), connected to the computer
   c. Micro-USB on J8 (XDS_USB), connected to the computer → this one is required but it not present in the AWR2944 documentation.
3. **Cables on the DCA1000 :**
   a. 5V input on J2 (5V_INPUT)
   b. RJ45 (Ethernet) cable on J6 (ETHERNET_JACK), connected to the computer.

/ ! \ There is thus no USB connection between the DAC1000 and the computer.

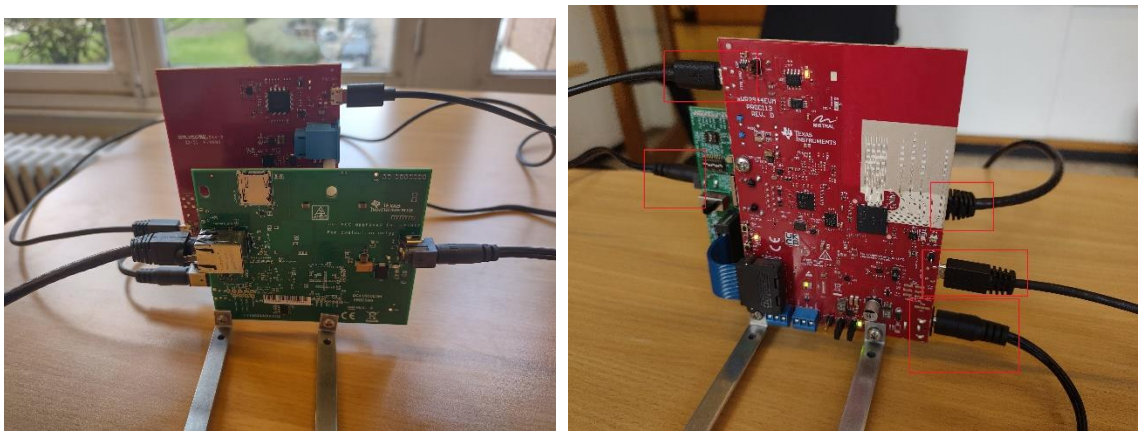

Figure 1: View of cables connections from both sides

B. Pins, switches, and jumpers setup

1. On the AWR2944 :
   a. Switch S1 (JTAG_MUX) : to put **up** (XDS) → this is not in the documentation

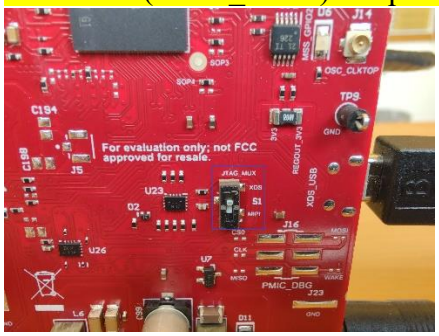

Figure 2: Switch S1 on AWR2944

b. Switch S2 (SPI_MUX) on the other side of the board : to put in the **middle** (no option selected) → this is not in the documentation

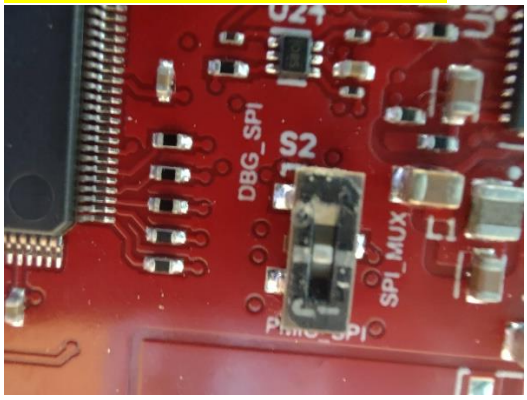

Figure 3: Switch S2 on AWR2944

c. Jumpers J17 (SOP2), J18 (SOP1), J20 (SOP2) to put like in Fig. 4. This corresponds to the « SOP Mode 2 (Development mode) » configuration. Since a closed jumper is a logical 1 and an open jumper is a logical 0, this is a 011 configuration.

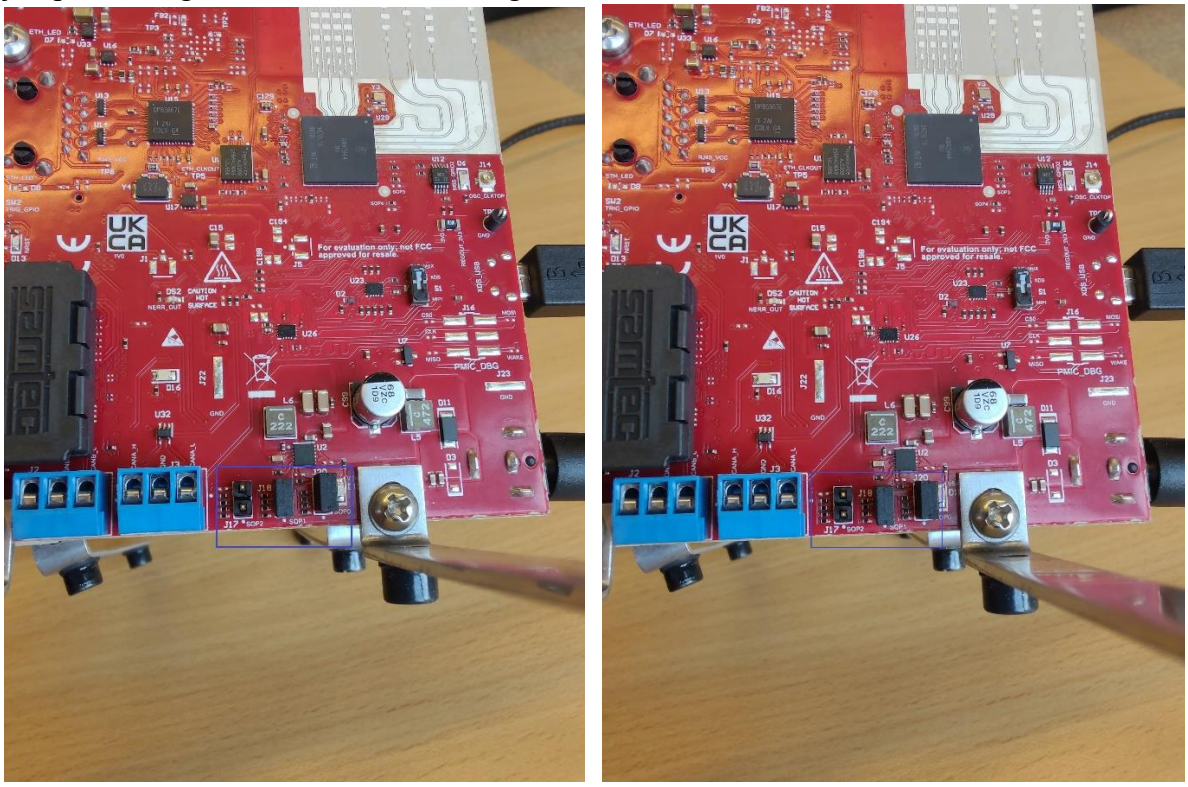

Figure 4: Jumpers J17, J18, and J20 on AWR2944 (the two pictures are just two different views)

2. On the DCA1000 :
   a. Set of switches in SW1 and SW2 to put like in the picture of Fig. 5 :
      i. SW1 : 1. Right 2. Right 3. Left (when looking like in the picture of Fig. 5)
      ii. SW2 : From right to left : 1. Up 2. Down 3. Down 4. Up 5. Down 6. Down 7. Up 8. Up

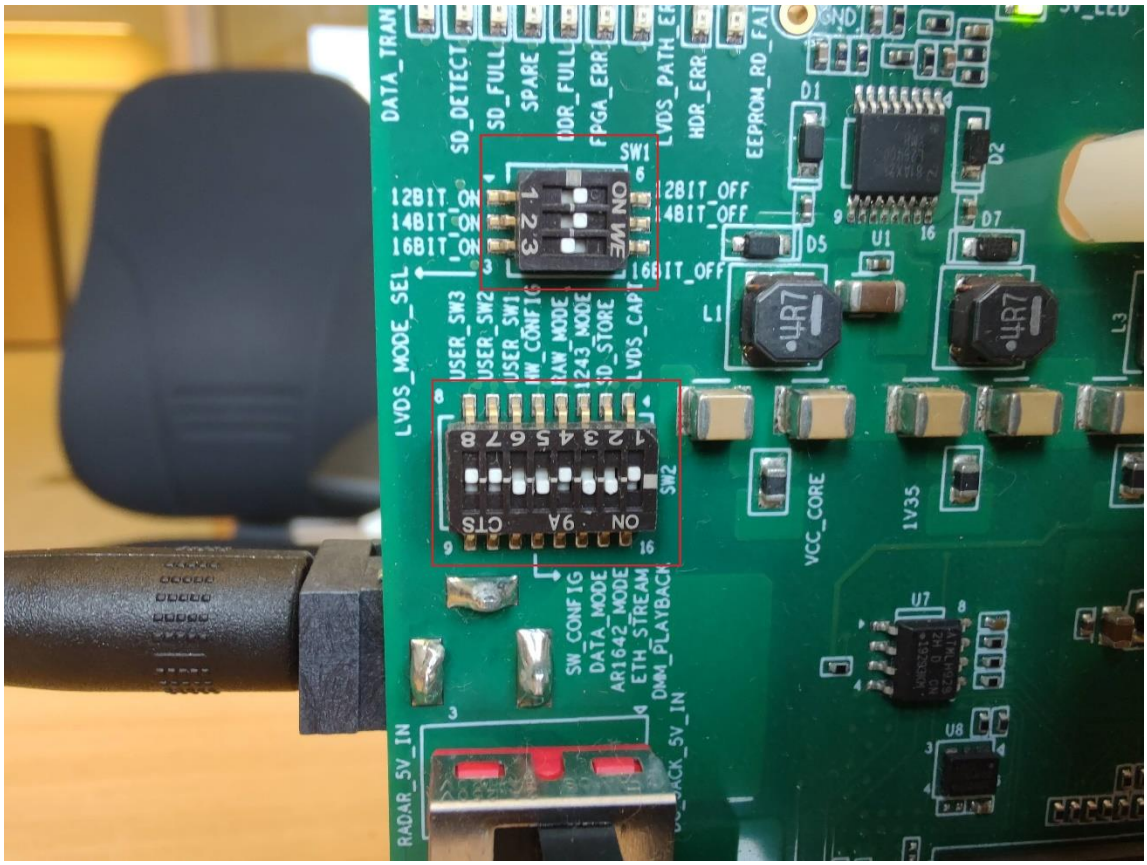

Figure 5: Switches SW1 and SW2 on DCA1000

b. Set of switches S1 to put like in Fig. 6 : From left to right : 1. Down 2. Up 3. Down 4. Up

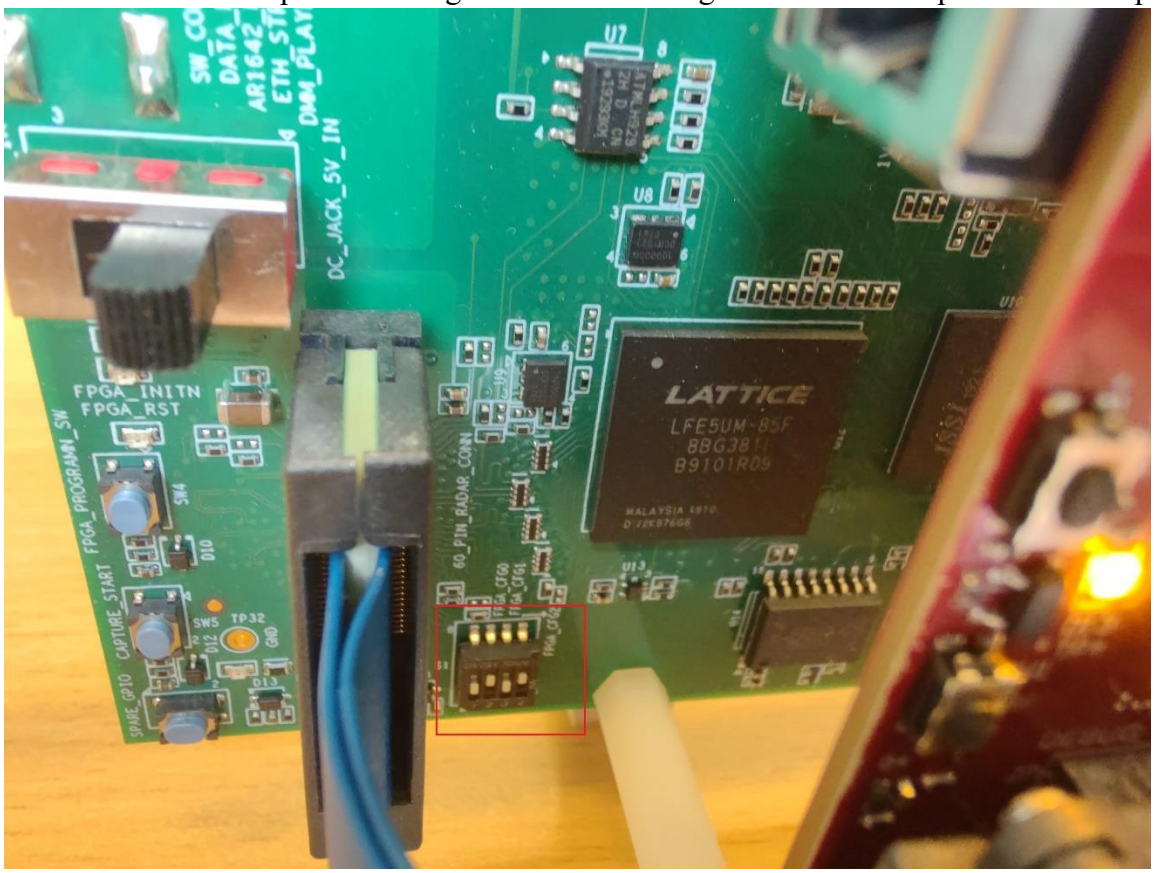

Figure 6: Switch S1 on DCA1000

C. Power-up order and status LEDs

The recommended order for power-up and plugging USB cables is the following :

1. Unplug all USB and Ethernet cables
2. Power the AWR2944
3. Power the DAC1000
4. Plug all USB and Ethernet cables

If this order is not respected, this might lead to a bug in mmWaveStudio at configuration step 2 (« RS232 Operations > Connect (2) »), connected to a problem with the EEPROM (the LED EEPROM_RD_FAIL close to the power supply LED will be lit in steady red, i.e. not blinking, in that case). This is not discussed in the documentation.

The LEDs on both boards when idle (no measurements) should look like in Fig. 7 : 2 green LEDs and 2 orange LEDs on the AWR2944, 2 green LEDs on the DCA1000.

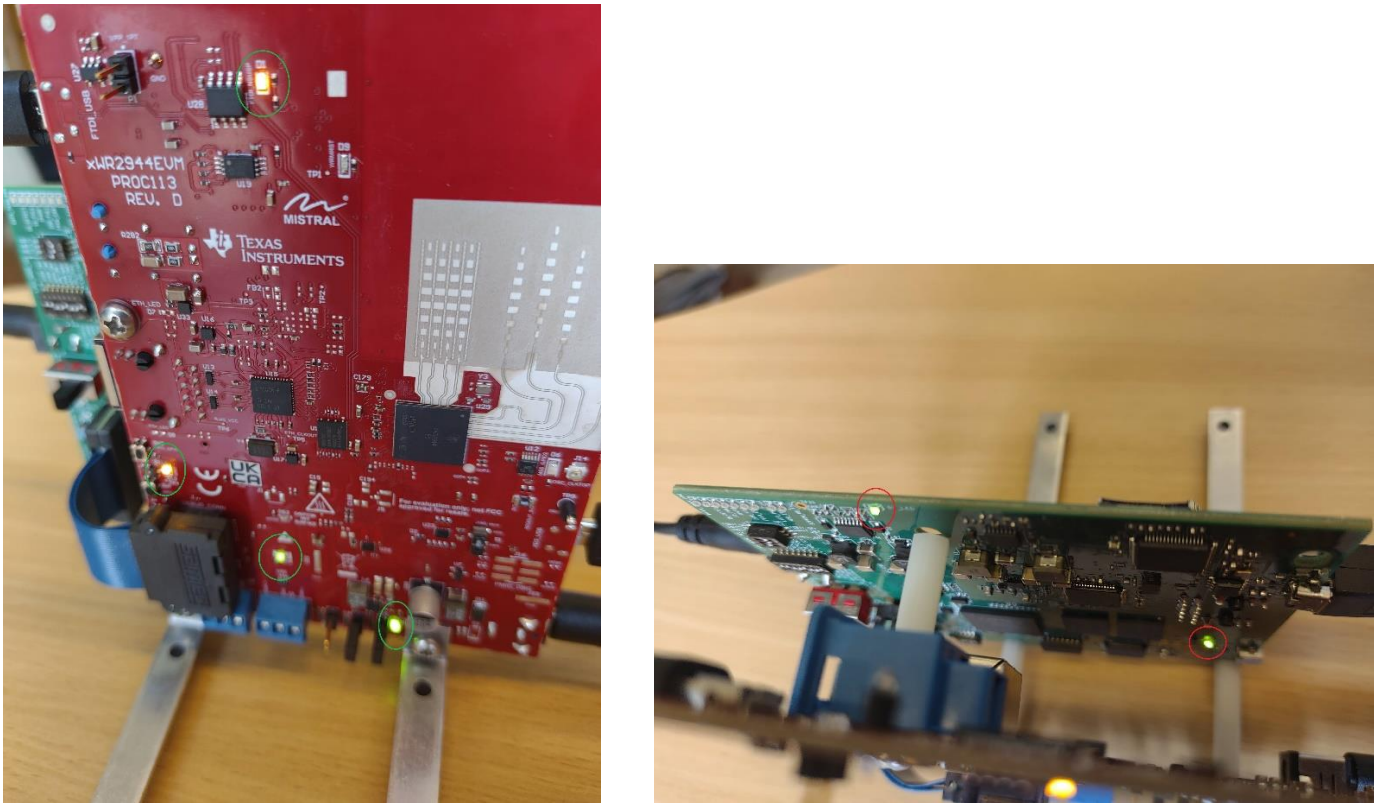

Figure 7: AWR2944 LEDs (left, highlighted in green) and DCA1000 LEDs (right, highlighed in red)

D. Remarks

- When used with the Lenovo travel hub adapter (that has one Ethernet port and one USB port), the USB cable from AWR2944 J8 (XDS_USB) was connected to the travel hub adapter USB port, and the USB cable from AWR2944 J10 (FDT_USB) was connected directly to the computer USB port.