

POWER DOWN WITH 8K SRAM RETENTION APP NOTE

1. Overview

This Power demo application allows each of the various low mode modes to be selected, using a simple user interface via the serial port.

2. Hardware Requirements

- Carrier Main Board(JN5189)
- ARNO Mezzanine Card
- Mini USB Cable
- PC or Laptop

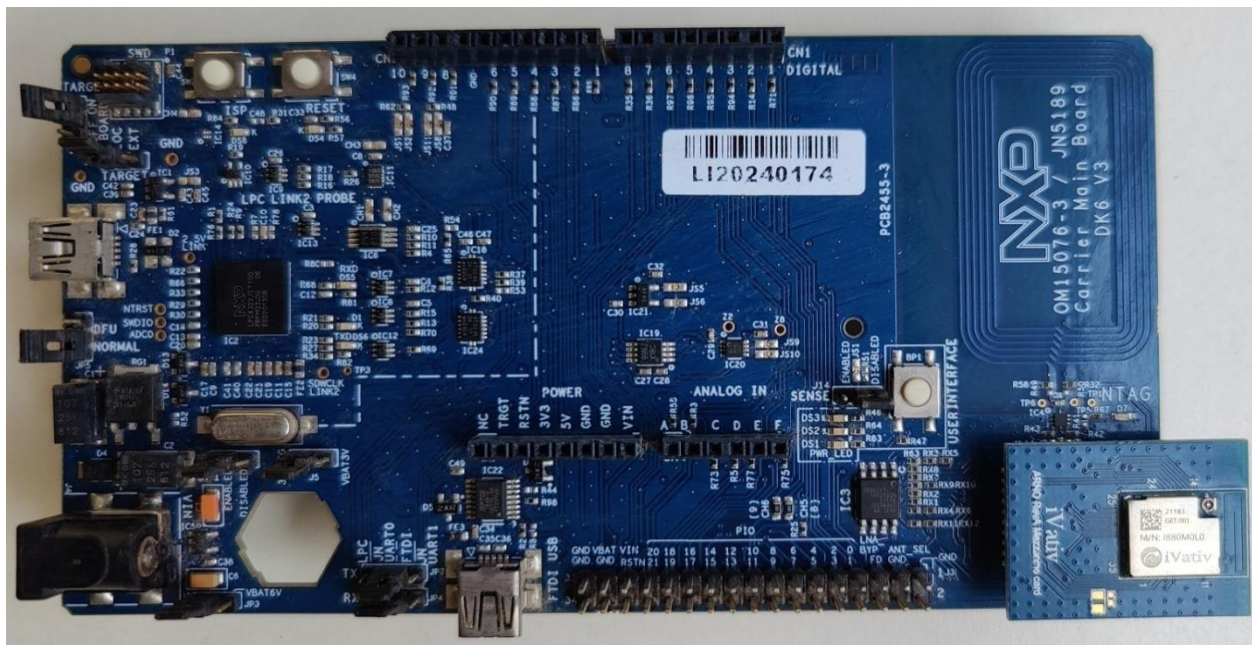
3. Software Requirements

- MCUXpresso IDE
- QN9090 SDK latest version
- Install IoT Toolbox in mobile from App Store/Google Play store

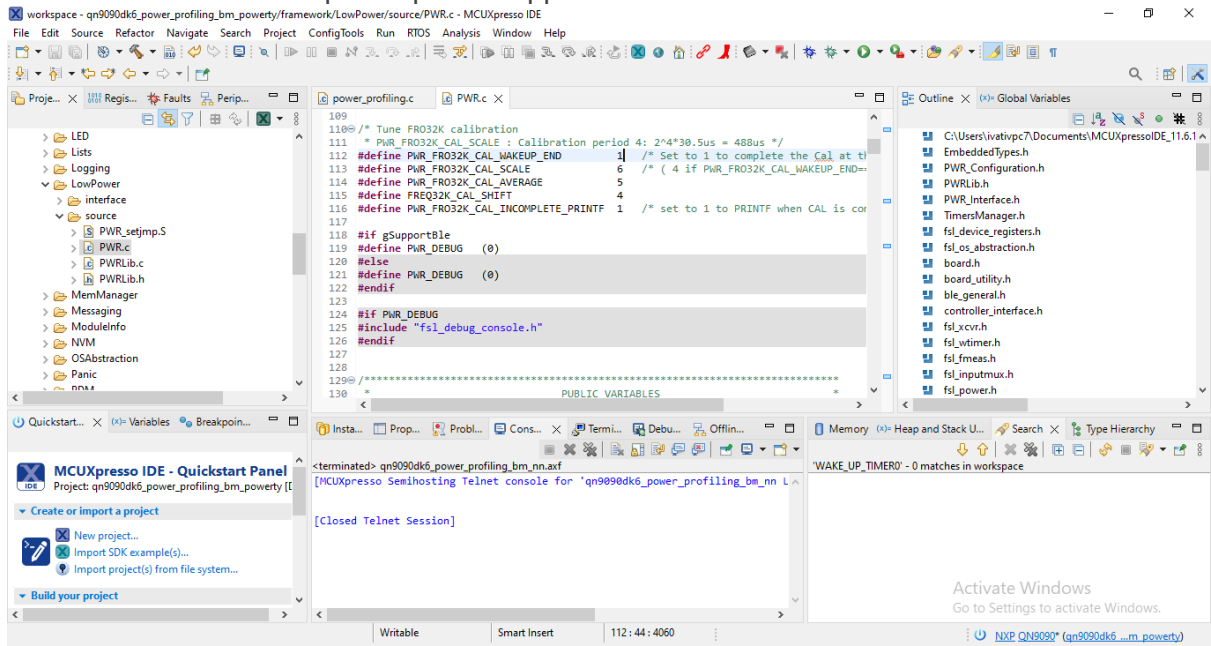
4. Procedure

Note: To make changes in QN9090 SDK for the ARNO module refer to ARNO module working procedure in ARNO User Guide.

- Insert the ARNO Mezzanine Card on the Carrier board as shown in below figure



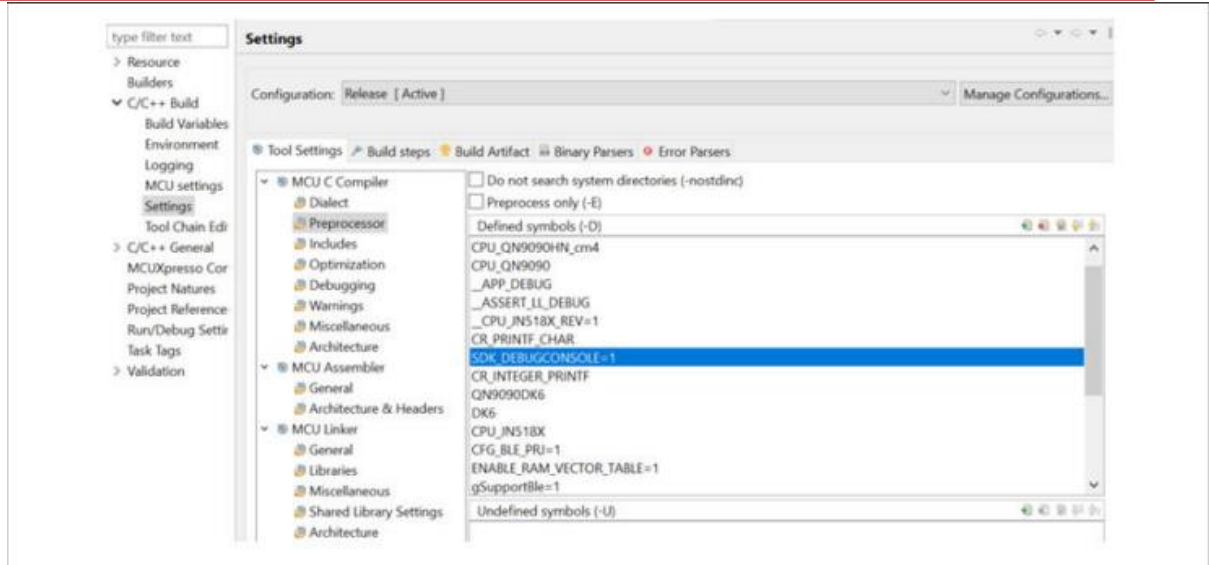
- Connect the ARNO DVK to the PC or Laptop with the mini USB cable
- In power down with 4k ram retention, in framework ->low power->pwr.c file have to turn on FRO32k is on in power profiler application



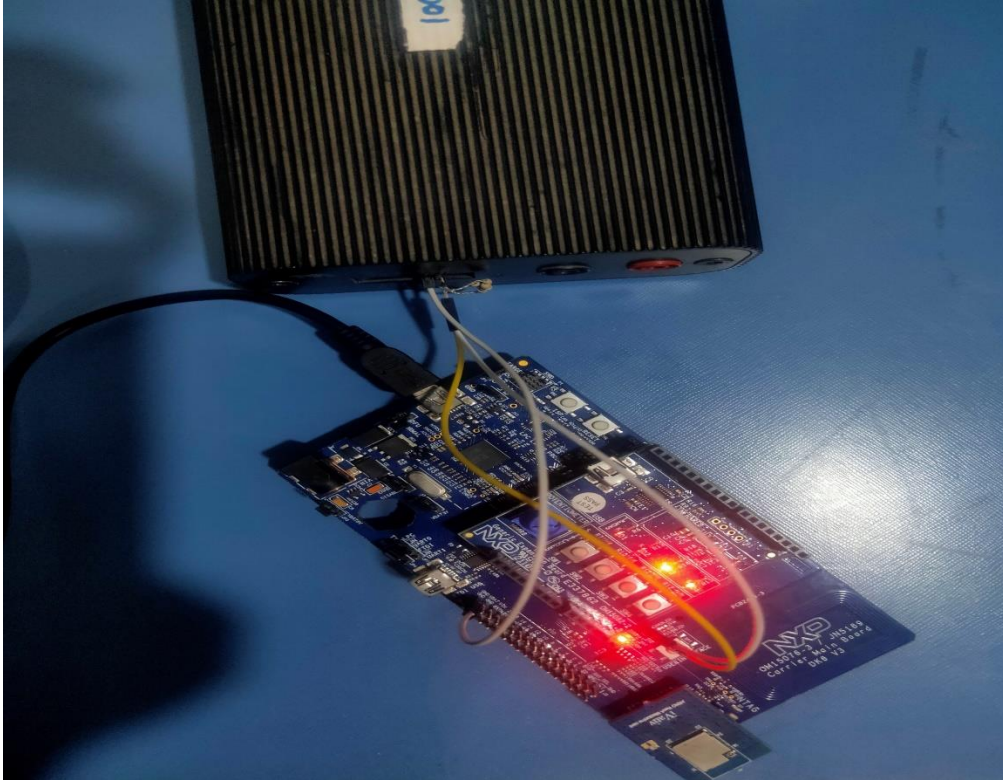
- The advertising interval modification can be accomplished by changing values of macro definitions in file power_profiling.h of the power_profiling project.
- The default values are:
 - #define g Reduced Power Min Advertising Interval_c 1600 /* 1 s */
 - #define g Reduced Power Max Advertising Interval_c 4000 /* 2.5 s */
- Then, this maximum advertising interval is changed from 4000 to 1600, it should be in this form: #define g Reduced Power Min Advertising Interval_c 1600 //1 s
 - #define g Reduced Power Max Advertising Interval_c 1600 // 2.5 s
- Because the app only requires one button to switch from one power state to another, the following lines inside app_pre_include.h of the power profile project must be changed as follows:


```
#define gC1kUseFro32K 1
#define gKBD_KeysCount_c 1
#define gLEDsOnTargetBoardCnt_c 0
```
- The UART debug must be disabled and it is done by adding the following line of code:

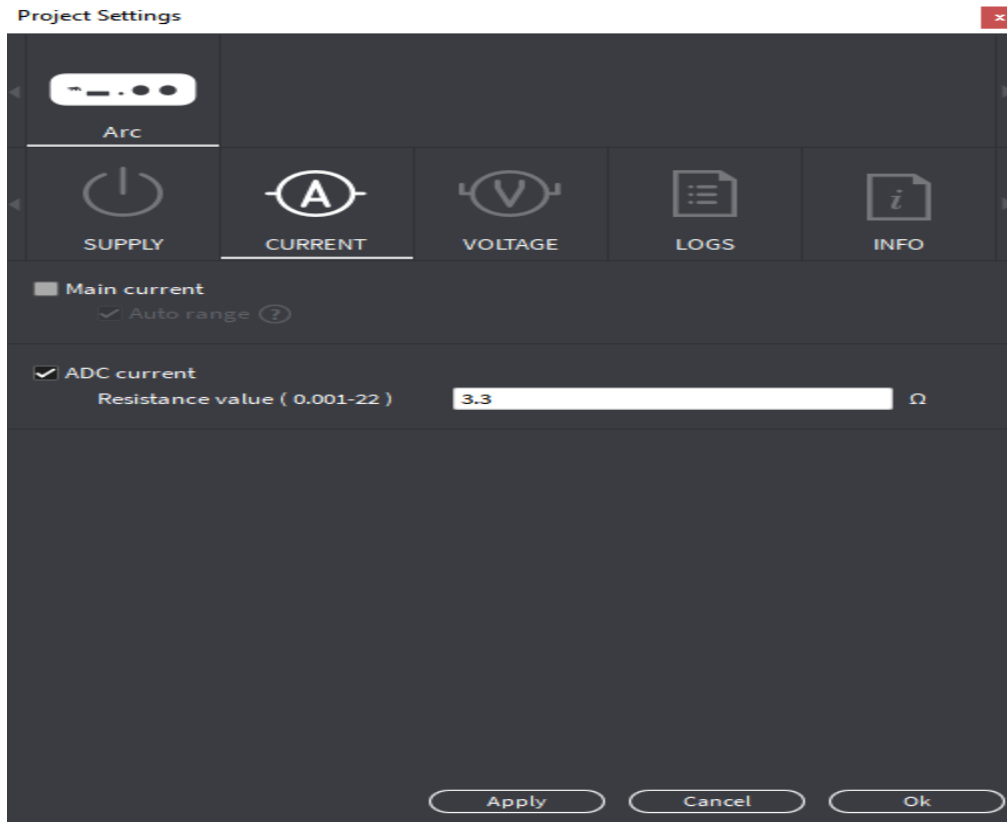

```
#define SDK_DEBUGCONSOLE DEBUGCONSOLE_DISABLE
```
- To prevent any compilation issue, you must remove the definition of SDK_DEBUGCONSOLE in the project settings by removing the below pre processor symbol:



- Then preparing the otii settings as shown in below
- 3.3ohms Resistor is placed across ADC positive and negative pins in Otii.
- Remove Jumper(J14) and place the ADC pins positive and negative pins in otii to the R51 and disabled pins of jumper(J14).
- ADC positive pin in otii is connected to the disabled pin of (J14) jumper .
- ADC negative pin in otii is connected to the R51 pin of (J14) jumper pin.
- AGND in otii is connected to the GND pin 33 on Board.
- Connections are made as per the below diagram.



- In otii settings, Ammeter settings as shown in figure.
- After selecting Ammeter, we have to give Resistance value as 3.3ohm and then click on Apply and Ok.



- Then, we got this below waveform of power down with 8k SRAM retention current measurement as 1090 to 1120 Nano Amps of current.

