

DEEP SLEEP 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

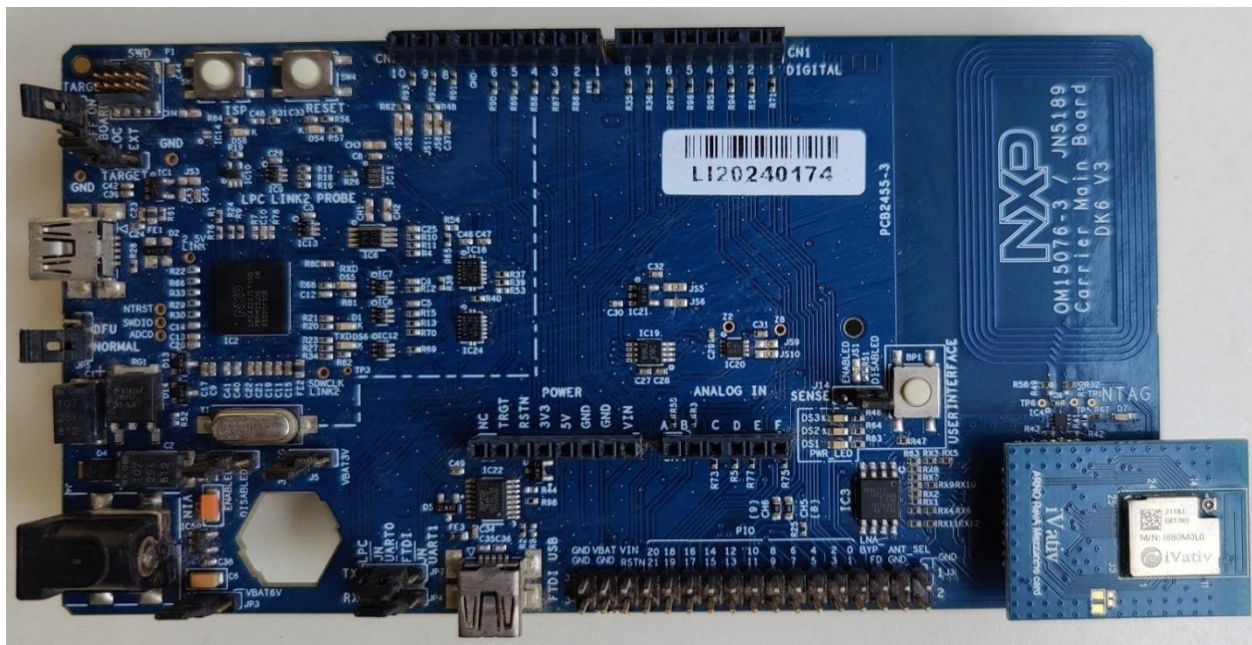
3. Software Requirements

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

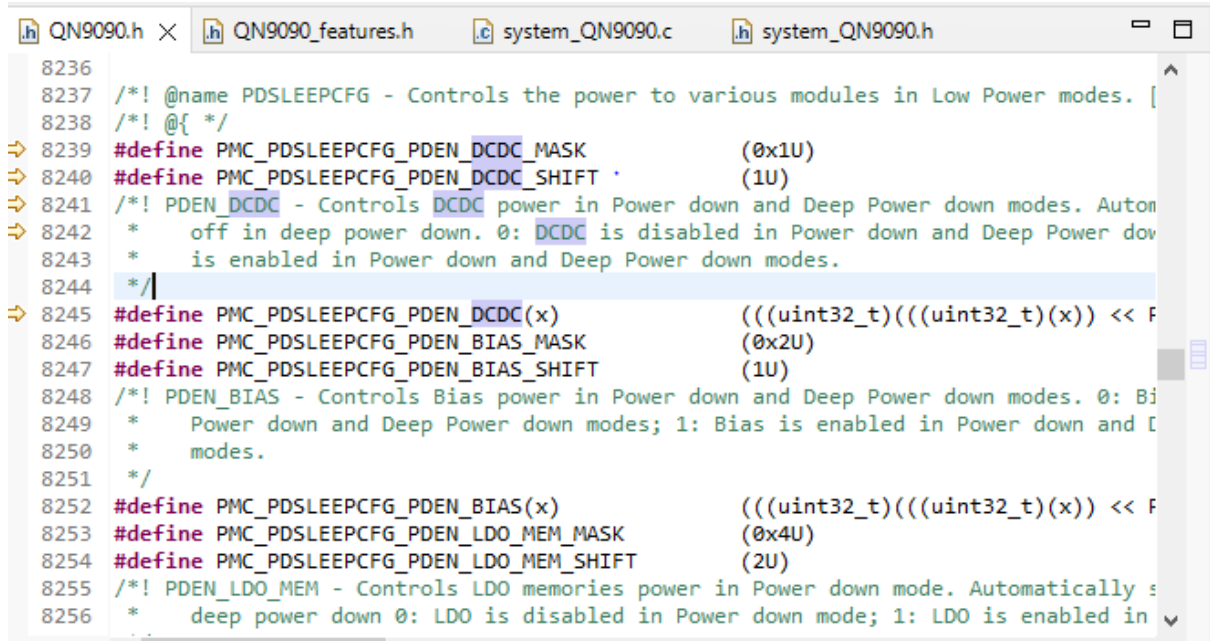
4. Procedure

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

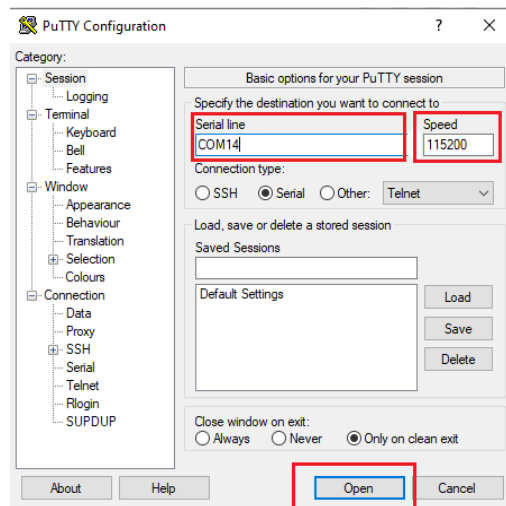


- Connect the ARNO DVK to the PC or Laptop with the mini USB cable
- Before going to run the application, we have to enable the DC to DC power in the QN9090.h file in device. In 8240 line by default it is 0U we have to change it to 1U for getting low power

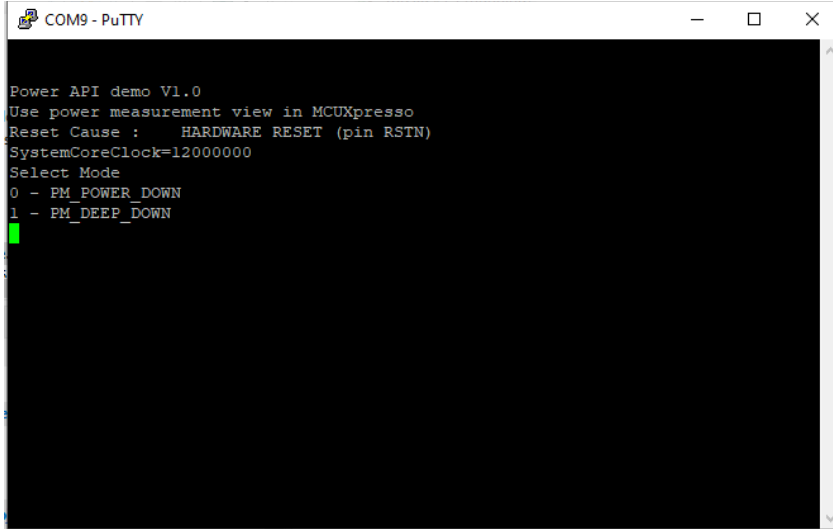


```
8236
8237 /*! @name PDSLEEPCFG - Controls the power to various modules in Low Power modes. [
8238 /*! @{ */
8239 #define PMC_PDSLEEPCFG_PDEN_DCDC_MASK          (0x1U)
8240 #define PMC_PDSLEEPCFG_PDEN_DCDC_SHIFT        (1U)
8241 /*! PDEN_DCDC - Controls DCDC power in Power down and Deep Power down modes. Autom
8242 * off in deep power down. 0: DCDC is disabled in Power down and Deep Power dow
8243 * is enabled in Power down and Deep Power down modes.
8244 */
8245 #define PMC_PDSLEEPCFG_PDEN_DCDC(x)           (((uint32_t)((uint32_t)(x)) << P
8246 #define PMC_PDSLEEPCFG_PDEN_BIAS_MASK         (0x2U)
8247 #define PMC_PDSLEEPCFG_PDEN_BIAS_SHIFT       (1U)
8248 /*! PDEN_BIAS - Controls Bias power in Power down and Deep Power down modes. 0: Bi
8249 * Power down and Deep Power down modes; 1: Bias is enabled in Power down and [
8250 * modes.
8251 */
8252 #define PMC_PDSLEEPCFG_PDEN_BIAS(x)           (((uint32_t)((uint32_t)(x)) << P
8253 #define PMC_PDSLEEPCFG_PDEN_LDO_MEM_MASK     (0x4U)
8254 #define PMC_PDSLEEPCFG_PDEN_LDO_MEM_SHIFT    (2U)
8255 /*! PDEN_LDO_MEM - Controls LDO memories power in Power down mode. Automatically s
8256 * deep power down 0: LDO is disabled in Power down mode; 1: LDO is enabled in
```

- Compile and run the application
- Press the reset button on the DVK
- Open the device manager and check for the COM port
- Open the putty terminal in PC, change the serial line with the com port number and the speed with the 115200 and then click on open

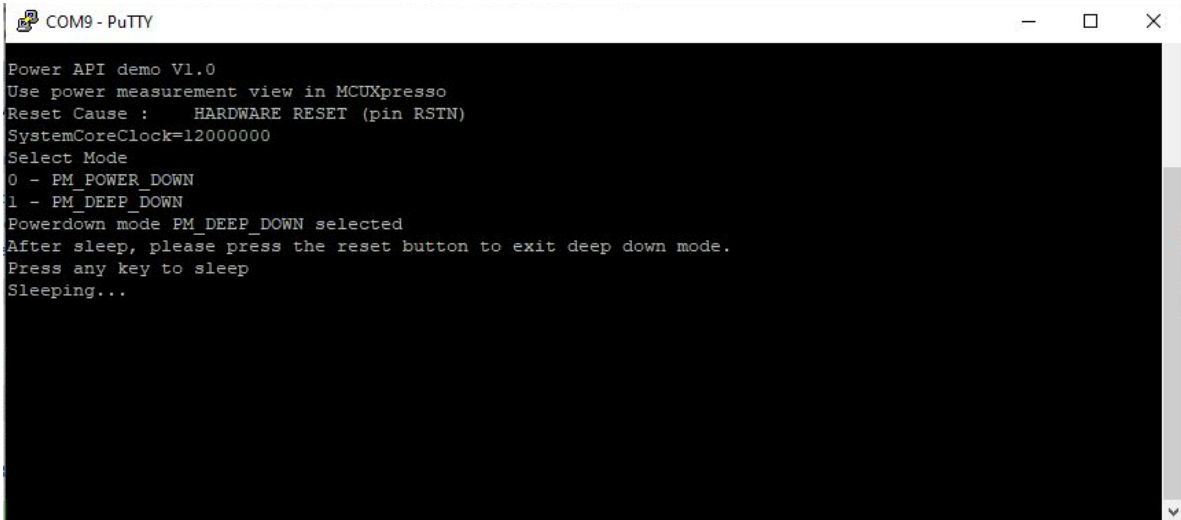


- Options can be observed on the serial terminal on the putty like below figure



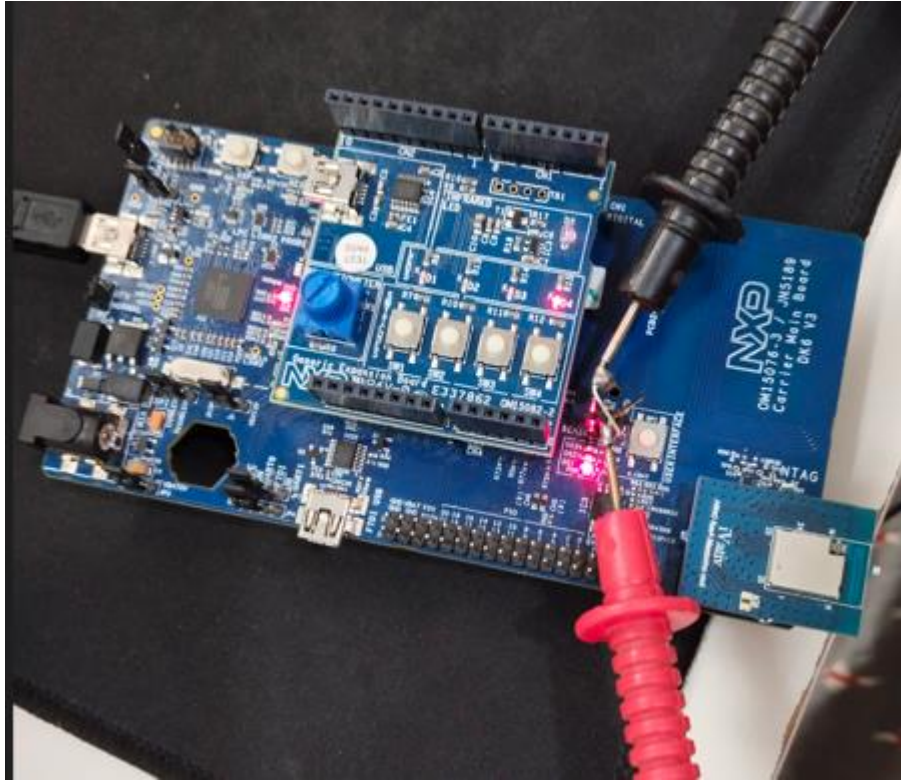
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COM9 - PuTTY
Power API demo V1.0
Use power measurement view in MCUXpresso
Reset Cause :   HARDWARE RESET (pin RSTN)
SystemCoreClock=12000000
Select Mode
0 - PM_POWER_DOWN
1 - PM_DEEP_DOWN
█
```

- User must select PM_DEEP_DOWN and press enter to enter into deep power down mode



```
COM9 - PuTTY
Power API demo V1.0
Use power measurement view in MCUXpresso
Reset Cause :   HARDWARE RESET (pin RSTN)
SystemCoreClock=12000000
Select Mode
0 - PM_POWER_DOWN
1 - PM_DEEP_DOWN
Powerdown mode PM_DEEP_DOWN selected
After sleep, please press the reset button to exit deep down mode.
Press any key to sleep
Sleeping...
```

- Now, we have to measure the current with multi meter by connecting positive terminal to the jumper(J14) pin 1 and negative terminal to the jumper(J14) pin2 then we will get 0.0003 milliamps i.e., converted into nano amps i.e., 300 nano amps.
- Multi meter connections are made as shown in below figure



- we will get 0.0003milli amps as shown in below figure i.e., converted into Nano amps i.e., 300 Nano Amps of current

