# LAB1

**Outline (5 sections):**

1. Introduce ZigBee (general back ground, stack architecture & IEEE802.15.4 Basics).
2. Introduce the hardware (ZigBee node, Pickit3, RS-232 connection).
3. Get familiar with the working environment (MPLAB IDE: make/build the source code; program the ZigBee node through Pickit3).
4. Allocate the channels to each group; change the channel in the "ZigBee.def" file using Zena's configuration function. Learn how to use ZENA packet sniffer.
5. Run the ZigBee demo.

**Section 1: introduction on ZigBee**

Please refer to "**Tips for ZigBee**" for the necessary baiscs. It is suggested that the student should look into the "**ZigBee 2006 Appliation note (AN1232)**". It will be very helpful for the later project.

**Section 2: hardware**

List of major hardware:

- ZigBee node: Demo board (PIC24fj256 MCU) with RF module (MRF24j40)
- Pickit3: connects the Demo board to the PC, so that MPLAB IDE can download the compiled ZigBee source code to the MCU.
- RS232 cable: connects the Demo board to the PC through RS-232 port, so that we can run the system console on the HyperTerminal.
- Zena network analyzer: capture all the data packet transferred over the air in a certain channel. The Zena software on the PC can process the packet, to help you analyze packet, and the topology of the network.

**Section 3: working environment**

Please follow the instructions in "**QuickStartGuide**" to get familiar with the working environment. *You can try to program the MCU first, but do not run the ZigBee demo now, because you are all using the same channel.*

The instructions in the Guide should be enough for this lab. If you want to know detail information about MPLAB IDE and Pickit3, please refer to:

- "MPLABUserGuide" or
  [http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en019469∂=SW007002](http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en019469∂=SW007002)

- [http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en010046](http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en010046)

**Section 4: Zena network sniffer**

The Zena software is in the "ZigBee2006Res source code & Zena Analyser" folder. Please refer to the corresponding part in "**QuickStartGuide**", to know how to use it. If you want to know more about Zena, please refer to "**Zena User's Guide**".

**Section 5: Run the ZigBee demo**

Now you can run the ZigBee demo following the last part in "**QuickStartGuide**". Don't forget to see it on Zena, have fun!

* All the mentioned documents will be provided, and please bring your USB disk to the lab or create your group cloud disk as the lab report needs lab result graphs attached. Thanks !!