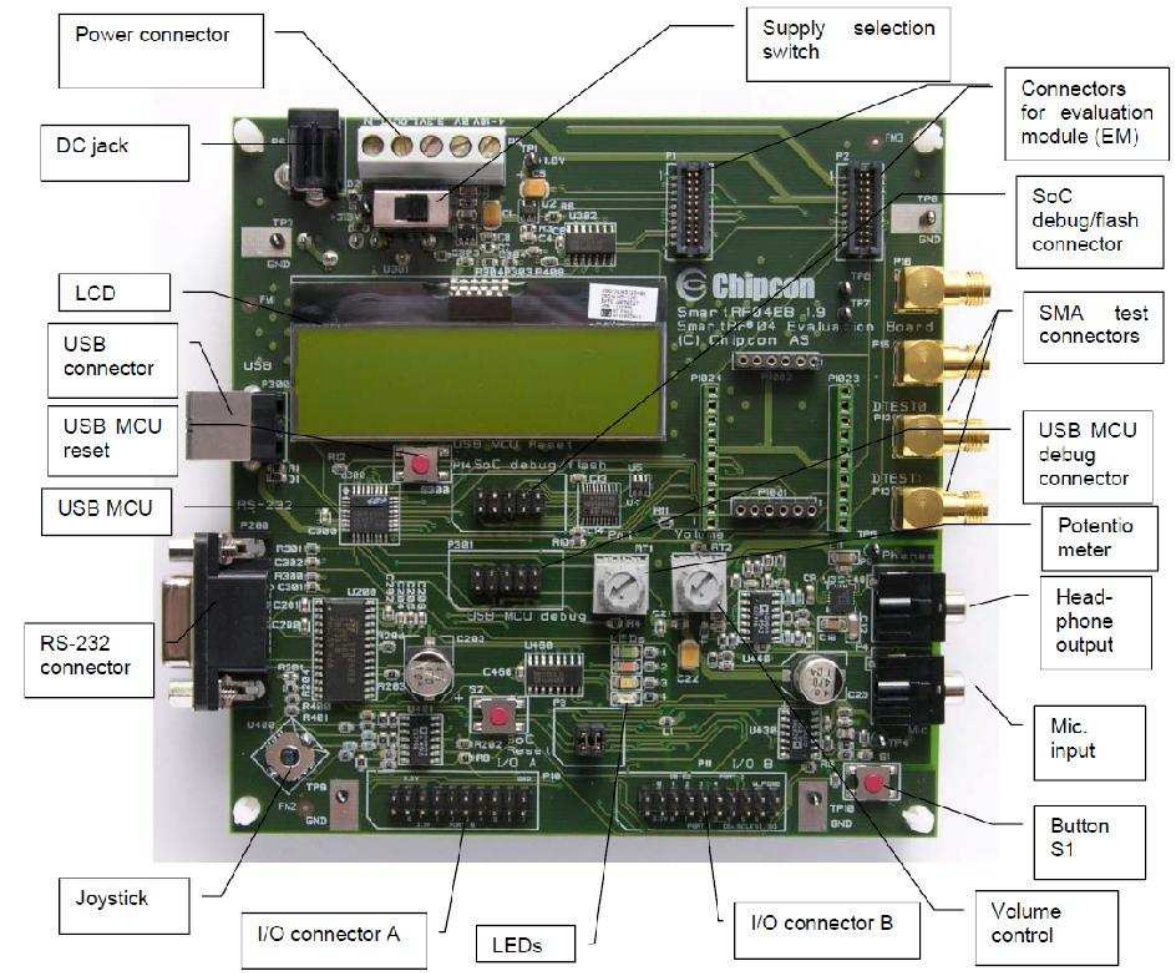
ZigBee tools

- Z-Stack™: is TI's ZigBee compliant protocol stack for a growing portfolio of IEEE 802.15.4 products and platforms
- IAR: is a development tools for testing and compiling Z-Stack based applications.
  - It incorporates IAR C/C++ Compiler for ARM Cortex-M3, assembler, linker, librarian, text editor, project manager, and debugger
- SmartRF™ Studio: is a Windows application that can be used to evaluate and configure Low Power RF-ICs from Texas Instruments.

Practical part

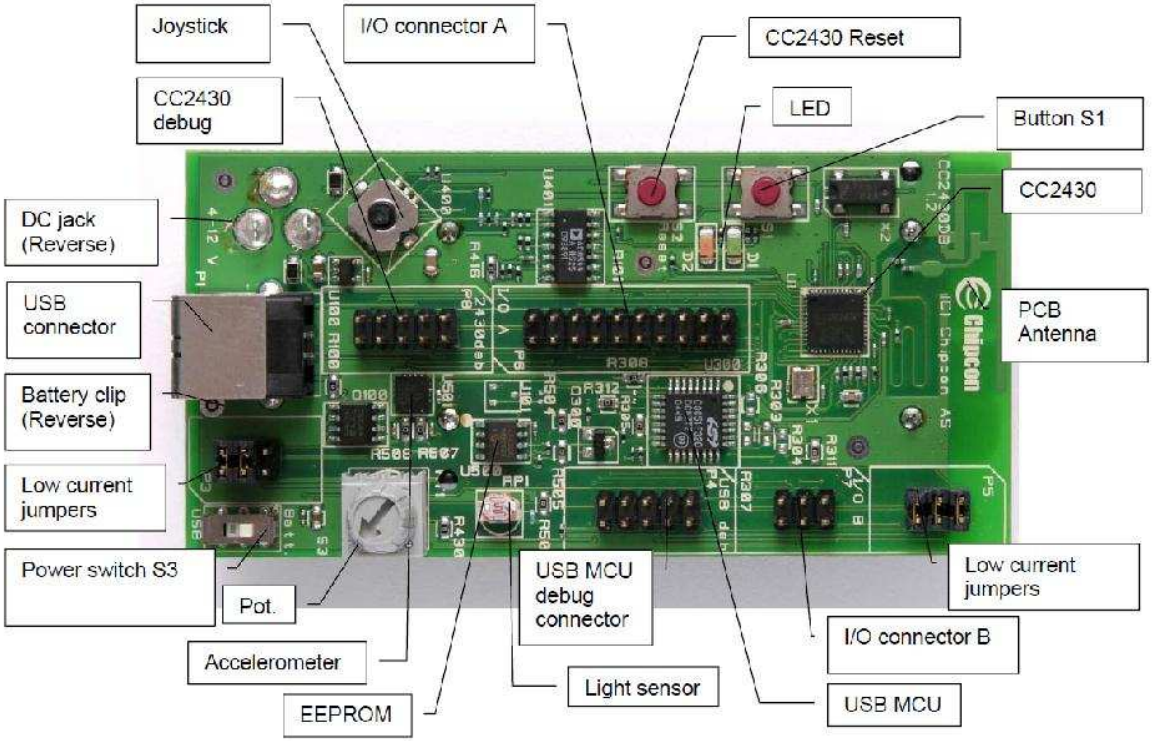
- Zigbee boards:
  - **Chipcon SmartRF04EB Evaluation Board with CC2430EM**

Practical part



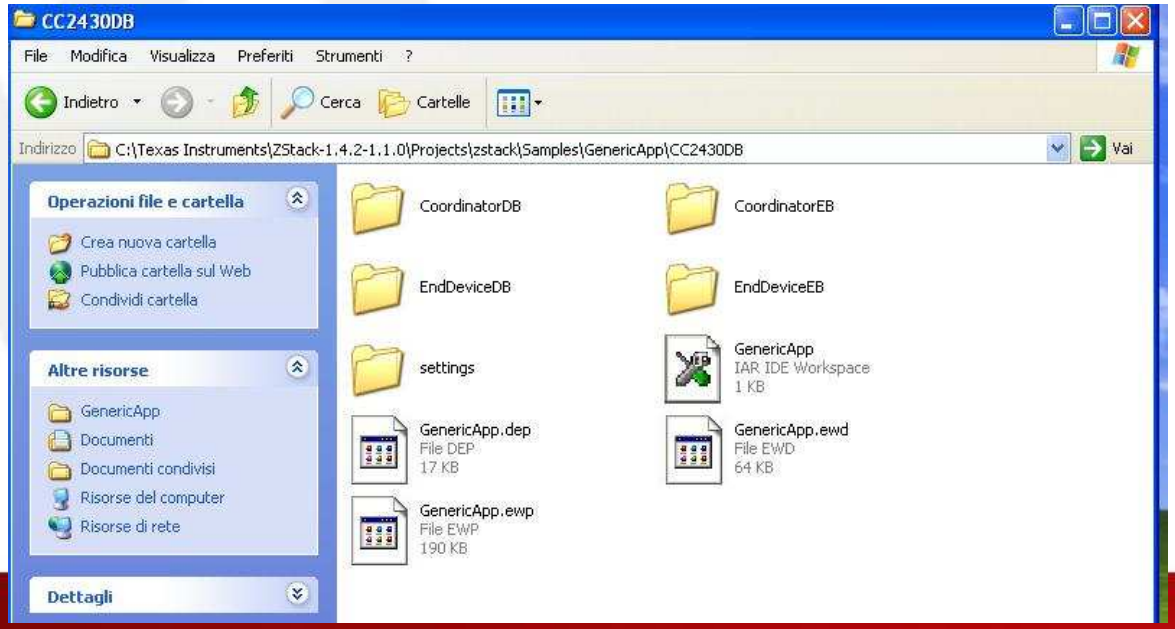
Practical part

- Zigbee boards:
  - **Chipcon CC2430DB Development Board**



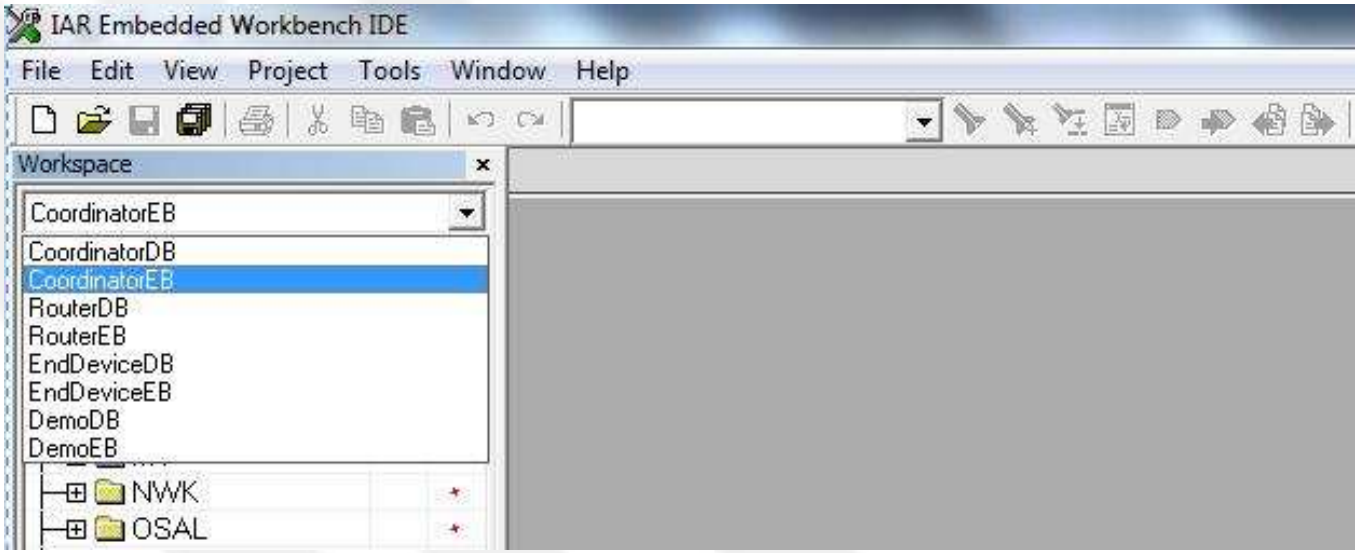
Open example

- Open GenericApp example(Zstack & IRA tools) from example folder as shown bellow:
  - C:\texasInstrument\Zstack-1.4.2.1.1.0\project\Zstack\samples\GenericApp\CC2430DB\GenericApp



Practical part

– Choose Coordinator or End device based on your board type (ED, DB) and ZigBee role (ZC,ZR,ZED)

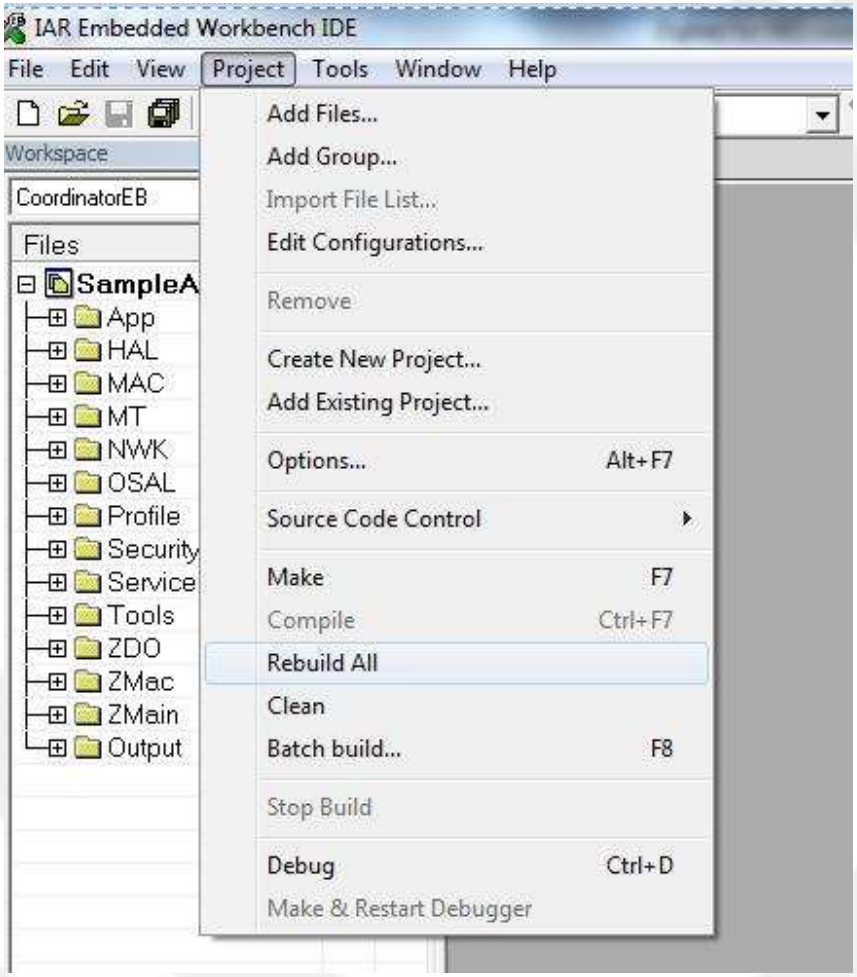


Practical part

- then
  - Project-> buildall
  - Project->Debug

  (for configuration)

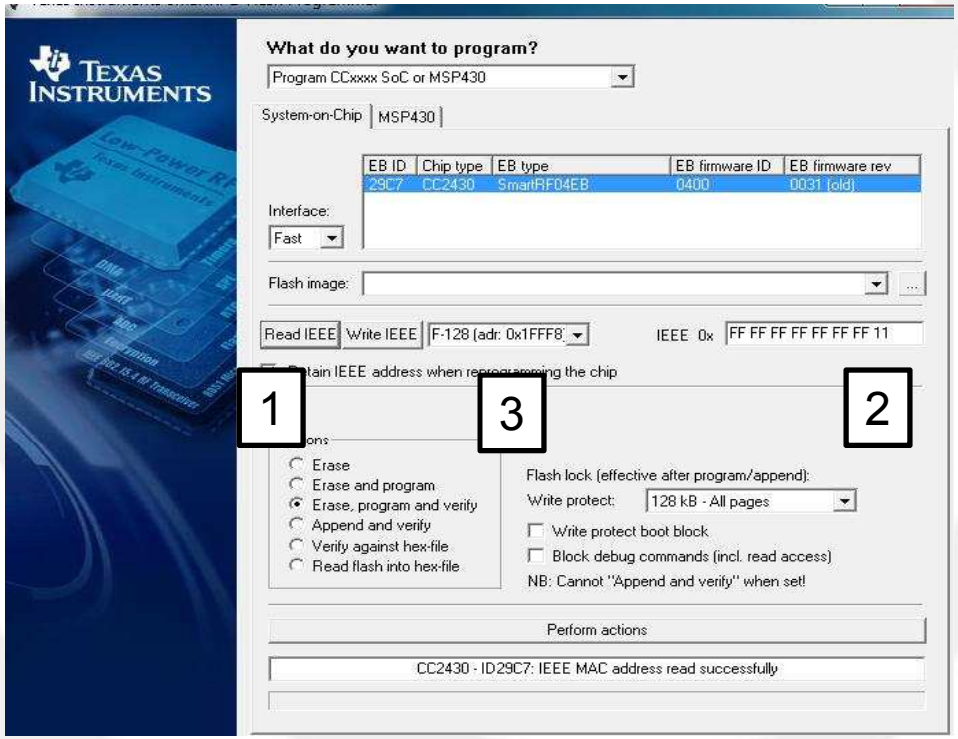
  Reset zigBee kit from its switch.
  - S300 for EB
  - S2 for DB
- Repeat these steps to configure other devices



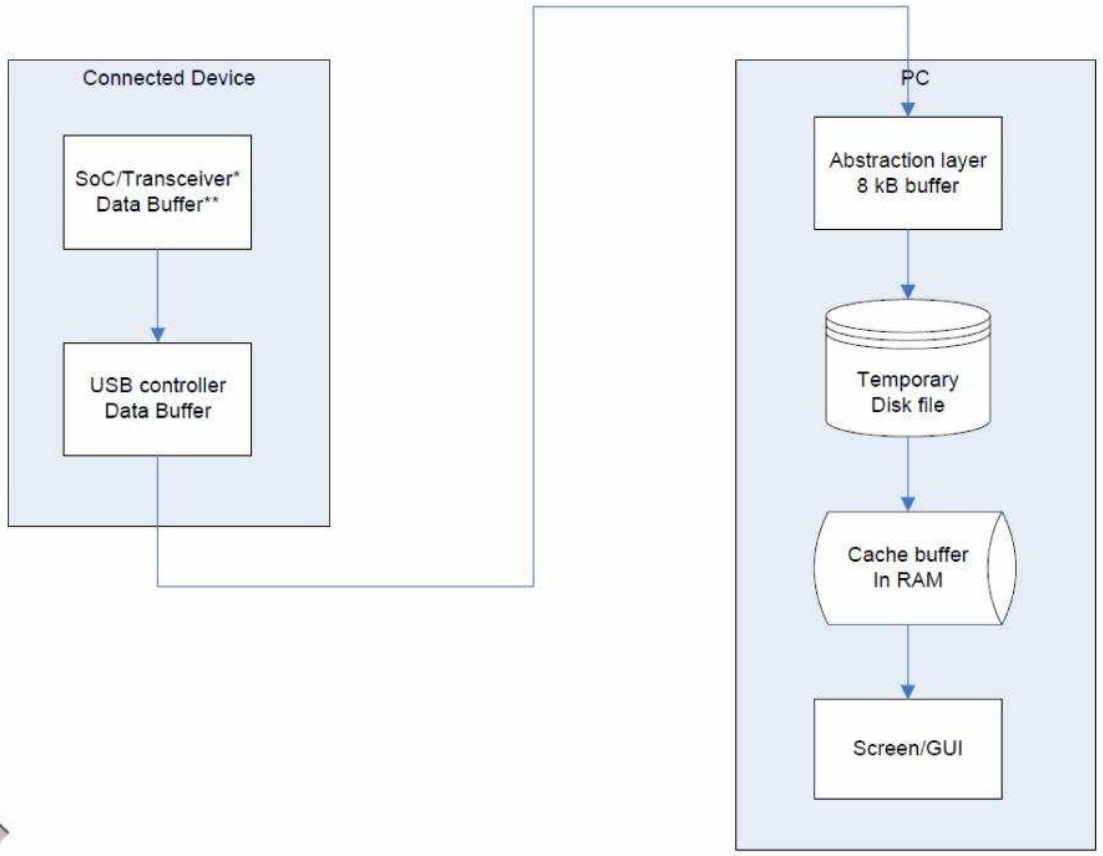
Practical part

- SmartRF tool
  - IEEE address 8 bytes (static)

1. Read
2. Change IEEE
3. Write

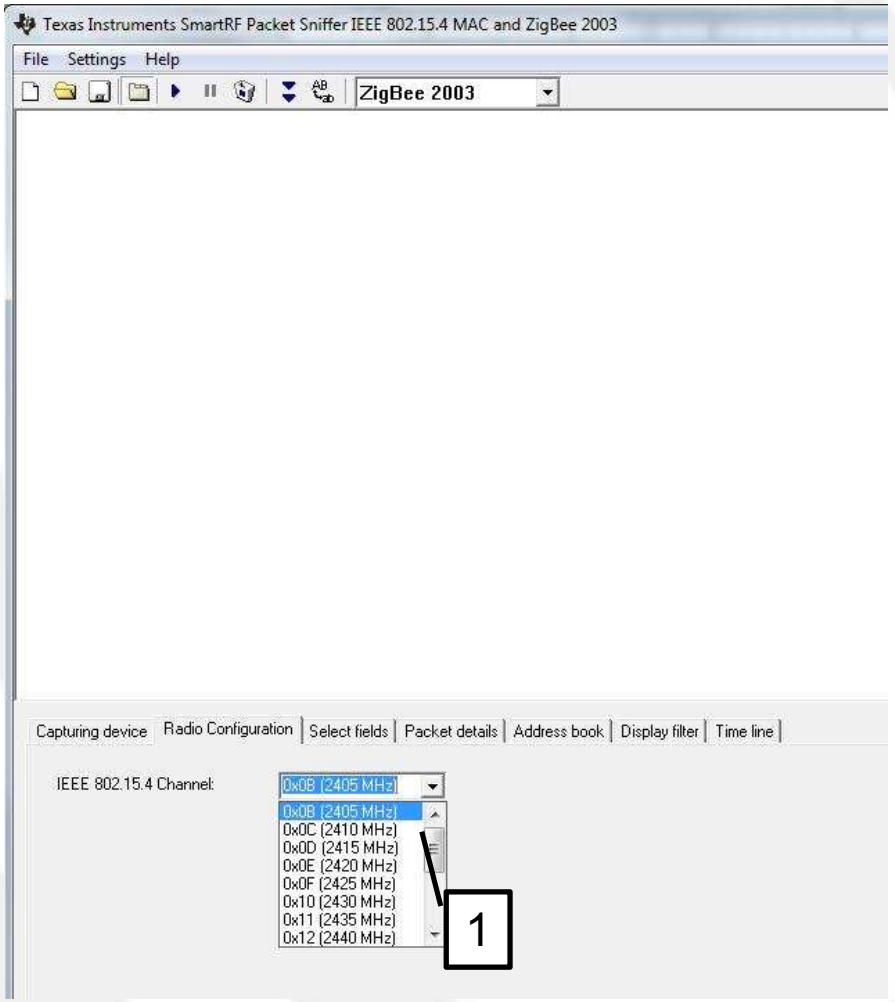


RF sniffing

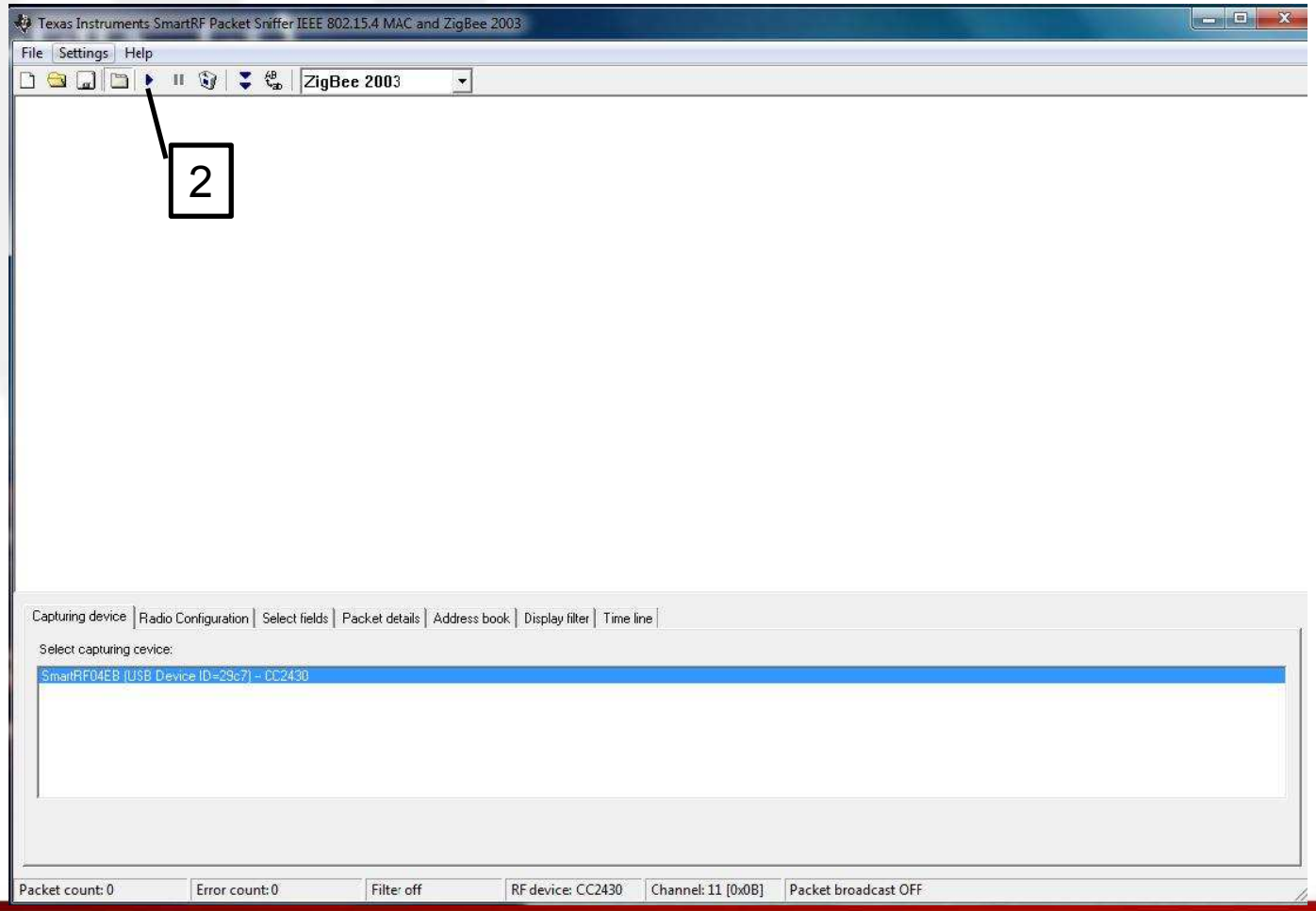

Connected Device
SoC/Transceiver*
Data Buffer**
USB controller
Data Buffer
PC
Abstraction layer
8 kB buffer
Temporary
Disk file
Cache buffer
In RAM
Screen/GUI


ZigBee

RF sniffing


Texas Instruments SmartRF Packet Sniffer IEEE 802.15.4 MAC and ZigBee 2003
File
Settings
Help
ZigBee 2003
Capturing device
Radio Configuration
Select fields
Packet details
Address book
Display filter
Time line
IEEE 802.15.4 Channel:
0x0B (2405 MHz)
0x0B (2405 MHz)
0x0C (2410 MHz)
0x0D (2415 MHz)
0x0E (2420 MHz)
0x0F (2425 MHz)
0x10 (2430 MHz)
0x11 (2435 MHz)
0x12 (2440 MHz)
1

RF sniffing


Texas Instruments SmartRF Packet Sniffer IEEE 802.15.4 MAC and ZigBee 2003
File
Settings
Help
ZigBee 2003
2
Capturing device
Radio Configuration
Select fields
Packet details
Address book
Display filter
Time line
Select capturing cevice:
SmartRF04EB (USB Device ID=29c7) – CC2430
Packet count: 0
Error count: 0
Filter off
RF device: CC2430
Channel: 11 [0x0B]
Packet broadcast OFF

RF sniffing

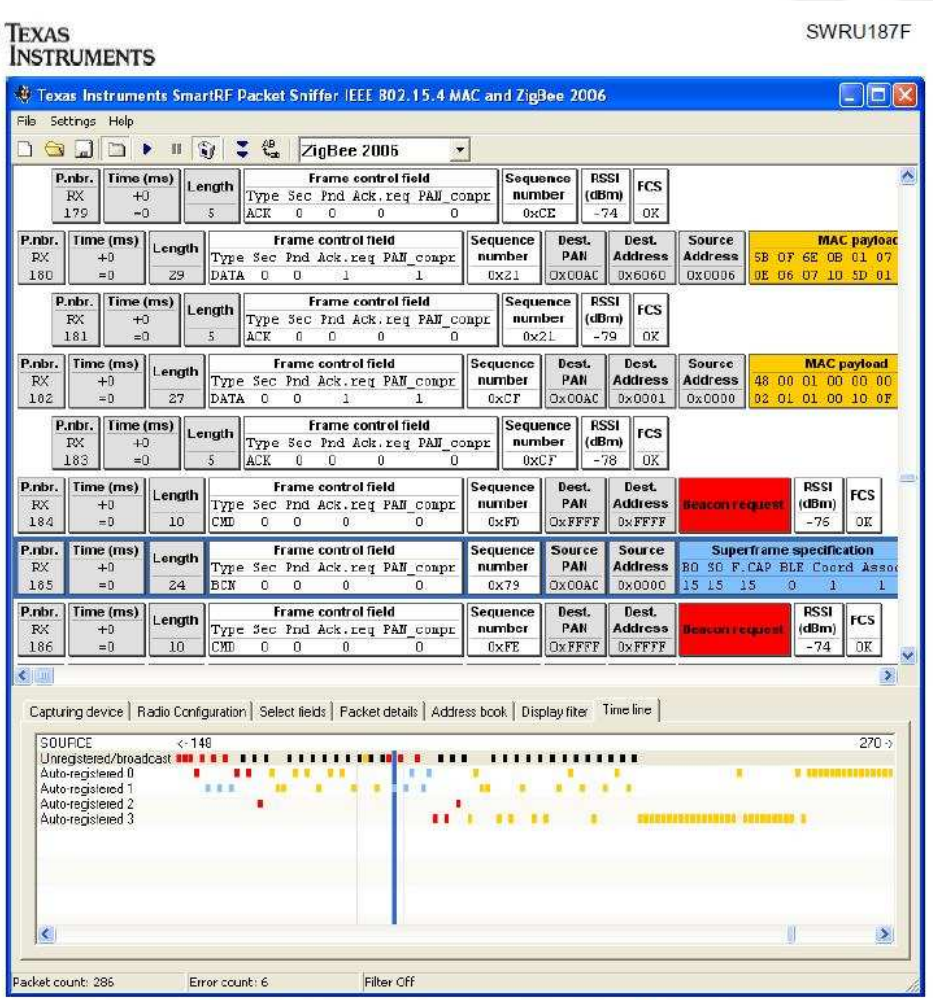
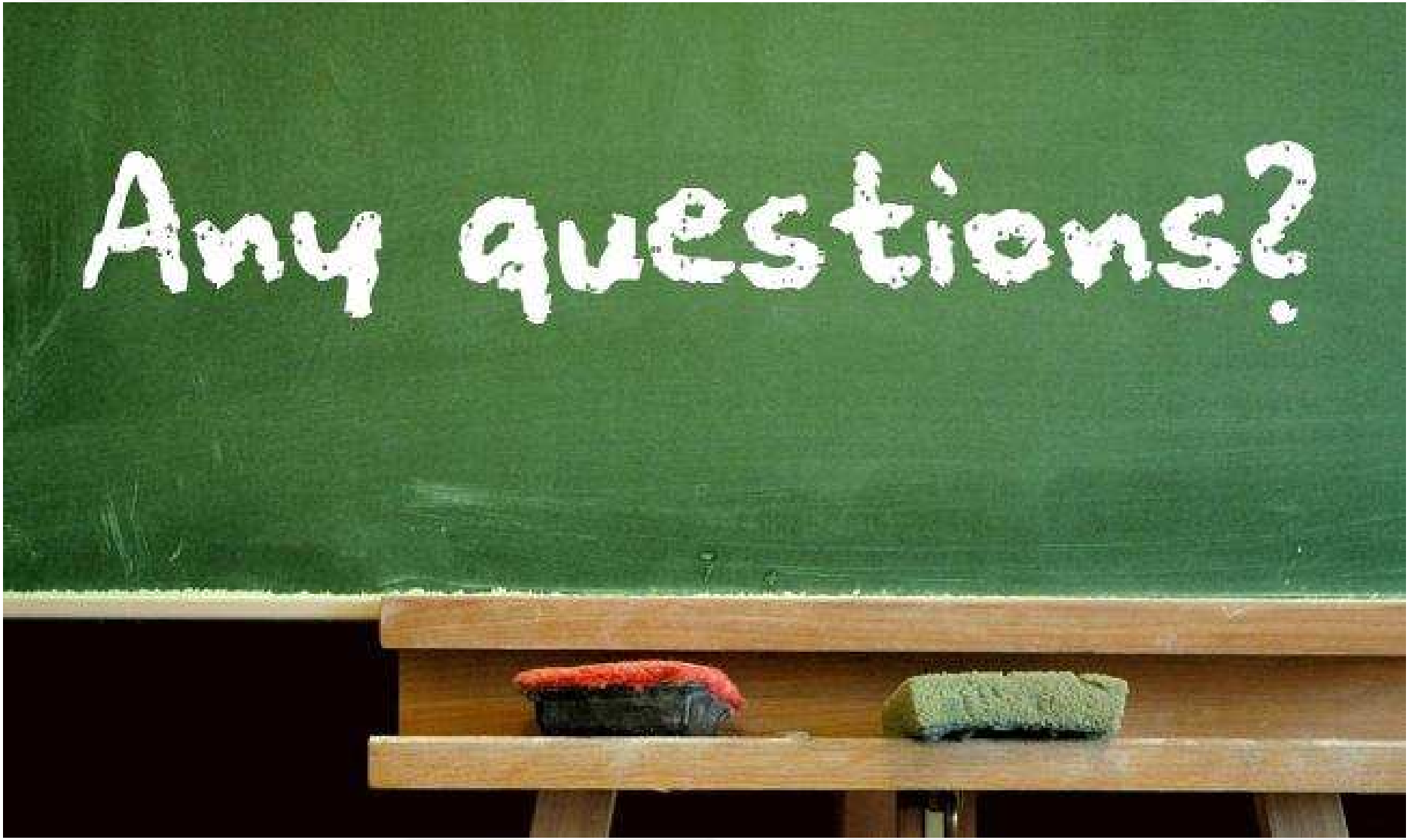


Figure 12: Packet sniffer screenshot from the IEEE8022.15.4/ZigBee protocols


Any questions?