CC32xx Idle Profile NonOS Application

Overview

Idle profile enables the user to measure current values, power consumption and other such parameters for CC3200, when the device is essentially idle(both NWP and APPS subsystems in low power deep sleep condition). The other main objective behind this application is to introduce the user to the easily configurable power management framework.

Application details

This particular application showcase the usage of Power Management Framework(in a NON-OS environment) to bring the device IN and OUT of LPDS as per the user's requirement. In contrast to the Idle Profile Application, this application provides more control to the user(rather than the framework). The responsibility of reconfiguring the peripheral drivers(after the device comes out of LPDS)has been left to the appication. For more information regarding Power Management Framework, please refer to CC32xx Power Management Framework.

Current Measurement

This application specify the Low Power Deep Sleep(LPDS) as the lowest power mode. At times, both NWP and APPS subsystem will be in LPDS. In which case, the current values can be as low as in the order of hundreds of microseconds. The procedure for measuring current can be found at CC3200 Low Power Modes Current Measurement page.

Program Flow

Most the parameters user will need to modify are specified as MACROs

- GPIO_SRC_WKUP - Gpio to be used as wake up source.
- APP_UDP_PORT - Port number on which the device will wait for udp packets.
- LPDS_DUR_SEC - Time (in seconds) after which the device will come out of LPDS.
- IP_ADDR - IP address of the device to which the UDP packets will be sent
- PORT_NUM - Port Number used for the UDP Communication
- BUFF_SIZE - Size of each UDP packet.
- UDP_PACKET_COUNT - number of UDP packet to be receieved or sent out.

```
#define GPIO_SRC_WKUP           PRCM_LPDS_GPIO13
#define LPDS_DUR_SEC            5


#define BUFF_SIZE              1472


/* udp transmission related parameters */
#define IP_ADDR                 0xFFFFFFFF /* broadcast */
#define PORT_NUM               5001
#define BUF_SIZE               1400
#define UDP_PACKET_COUNT       1000
```

In this application the device waits for the user input which can be one of the following string

- "sleep" - put the Device into LPDS only to be woken up by either configured GPIO source or the configured wake-up Timer
- "send" - send out UDP_PACKET_COUNT number of UDP packets to the IP_ADDR
- "recv" - receive UDP_PACKET_COUNT number of UDP packets

while waiting for the input the device will be in ACTIVE state. Once the command has been issued by the user, the device will try to enter LPDS whenever it can.In case of receiving, recv will time out in 5 seconds.

Source Files briefly explained

- **main.c** - The main file implementing the idle profile.
- **lp3p0_board.c** - Board specific initialization for Power Management framework .
- **lp3p0_plat_ops.c** - Board specific APIs like IO parking and framework loading.

Supporting Files

- **pinmux.c** - Generated by the PinMUX utility.

Common Files
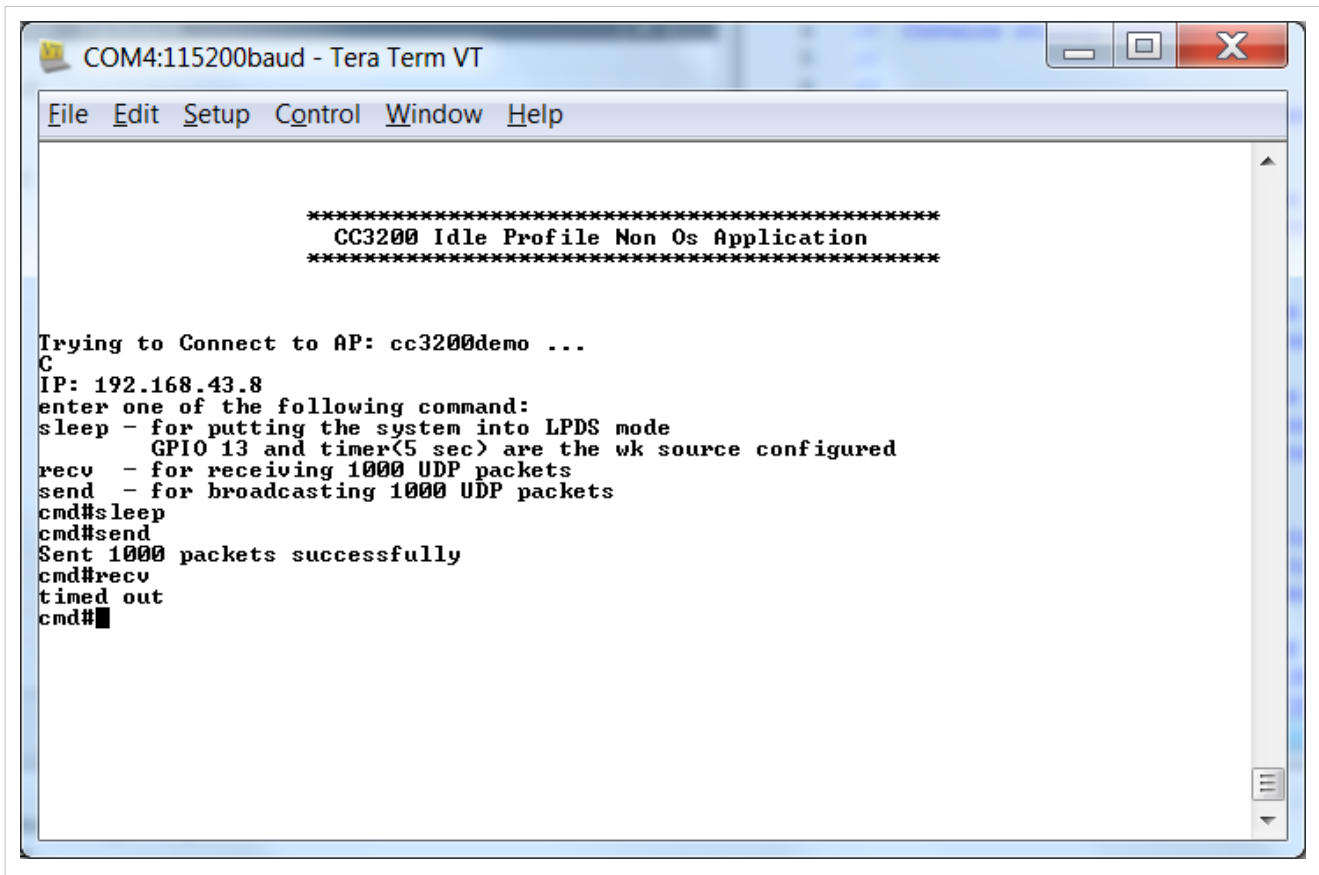
- **startup_ccs.c** - CCS related functions
- **startup_ewarm.c** - IAR related functions
- **uart_if.c** - contains UART Interface APIs
- **udma_if.c** - contains UDMA related APIs
- **utils_if.c** - contains utility routines

Usage

- Modify MACROs according to the requirement and recompile.
- Setup a serial communication application (HyperTerminal/TeraTerm). For detail info visit CC31xx & CC32xx Terminal Setting

On the host PC. The settings are:
- **Port**: Enumerated COM port
- **Baud rate**: 115200
- **Data**: 8 bit
- **Parity**: None
- **Stop**: 1 bit
- **Flow control**: None

- Run the application preferably from FLASH rather than from the debugger as debugger would disconnect in LPDS.
- Key in any command.

Limitations/Known Issues

Refer to CC32xx_Power_Management_Framework for limitations and known issues.

Article Sources and Contributors

CC32xx Idle Profile NonOS Application *Source*: http://processors.wiki.ti.com/index.php?oldid=193083 *Contributors*: Jitgupta

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