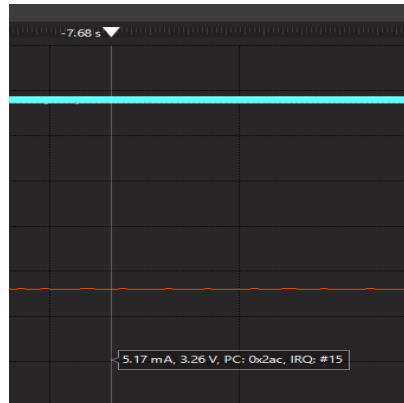# RAHUL YAMASANI

HW 1

### IOT

1. The instantaneous current measured using Energy Profiler, once the program has begun without any modification to the sample code is **5.17 mA**

5.17 mA, 3.26 V, PC: 0x2ac, IRQ: #15

2. Energy Score after resetting the Energy Profiler and waiting 30.60 seconds without any modification to the sample code is **522.31 mJ**

Avg Current	Avg Power	Total Energy	Time Span
5.20 mA	17.13 mW	522.31 mJ	30.60 s
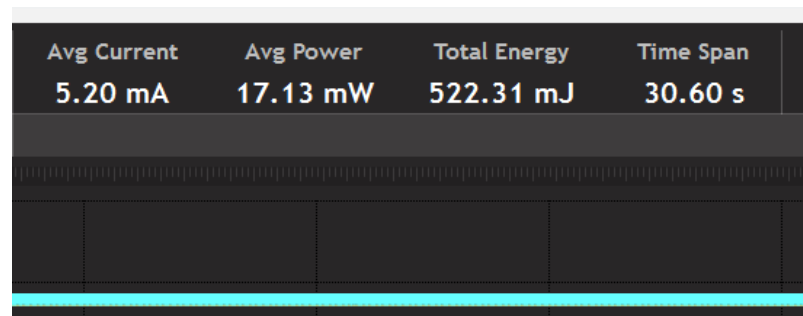
3. After commenting out the code to toggle LED1, the instantaneous current measured while LED0 is off is **4.75 mA**

4.75 mA, 3.27 V, PC: 0x2ac, IRQ: #15
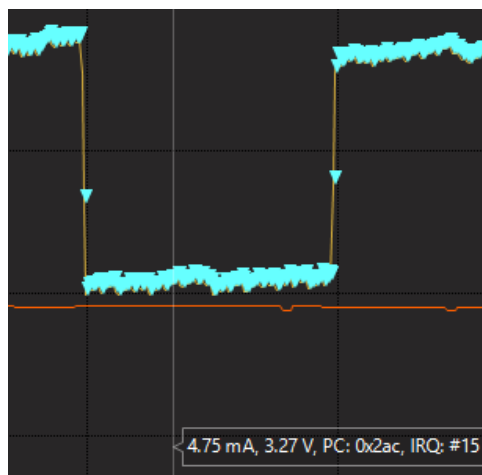
4. After commenting out the code to toggle LED1, the instantaneous current measured while LED0 is on is **5.20 mA**

5.20 mA, 3.26 V, PC: 0x2ac, IRQ: #15

5. After commenting out the code to toggle LED1, Energy Score after resetting the Energy Profiler and waiting 30 seconds is **494.27 mJ**

Avg Current	Avg Power	Total Energy	Time Span	Mode
4.95 mA	16.27 mW	494.27 mJ	30.37 s	Paused

OBSERVATION: On commenting one of the LED (LED 1), the Total energy got reduced from 533.31 mJ to 494.27 mJ, indicating that extra energy is consumed corresponds to LED 1 toggling.

Code used for Question 5:

```c
#include <stdint.h>
#include <stdbool.h>
#include "em_device.h"
#include "em_chip.h"
#include "em_cmu.h"
#include "em_emu.h"
#include "bsp.h"
#include "bsp_trace.h"

volatile uint32_t msTicks; /* counts 1ms timeTicks */

void Delay(uint32_t dlyTicks);

/**************************************************************************//
**
 * @brief SysTick_Handler
 * Interrupt Service Routine for system tick counter

***************************************************************************
/
void SysTick_Handler(void)
{
  msTicks++;        /* increment counter necessary in Delay()*/
}

/**************************************************************************//
**
 * @brief Delays number of msTick Systicks (typically 1 ms)
 * @param dlyTicks Number of ticks to delay

***************************************************************************
/
void Delay(uint32_t dlyTicks)
{
  uint32_t curTicks;

  curTicks = msTicks;
  while ((msTicks - curTicks) < dlyTicks) ;
}

/**************************************************************************//
**
 * @brief  Main function

***************************************************************************
/
int main(void)
{
  /* Chip errata */
  CHIP_Init();

  /* If first word of user data page is non-zero, enable eA Profiler trace */
  BSP_TraceProfilerSetup();

  /* Setup SysTick Timer for 1 msec interrupts  */
```

```c
    if (SysTick_Config(CMU_ClockFreqGet(cmuClock_CORE) / 1000)) while (1) ;

  /* Initialize LED driver */
  BSP_LedsInit();
  BSP_LedSet(0);

  /* Infinite blink loop */
  while (1)
  {
    BSP_LedToggle(0);
    //BSP_LedToggle(1);        // Commented part
    Delay(1000);
  }
}
```