

I entered this competition to teach myself the ARM toolchain, so I used the TI Schmartboard with a Stellaris LM3S828 MCU. I had never used an ARM MCU before, so I thought this was an excellent motivator.

I set out to build a tri-band (low-mid-high) audio meter out of RGB LEDs, that could also be attached to a computer to upload light patterns, so the audio meter could also be a decoration when not being used along with music. The audio data would come from an electret microphone, go first into an amplifier and then into the MCU's ADC, have a fft performed for a few different frequencies, those frequencies would each be assigned a color, and finally displayed on the RGB LEDs. The LEDs would be driven by the TLC5940 grayscale LED drivers.

That didn't happen at all.

All I managed to accomplish was realize two days ago that the Sandstorm-class Stellaris MCUs (the 3-digit part number devices) cannot use their internal clock to boot from. Lacking a crystal, I used my TI Launchpad to generate a 1MHz clock source for the board, just to see if I could program it. That turned out to be a success, so I programmed it with some sample TI code to make an LED blink, after making the needed changes so it would work on the LM3S828.

The next challenge was that neither the 1MHz clock for the launchpad nor the internal clock of the MCU chosen could operate the MCU's PLL, which turned out to be a requirement to operate the ADC. No ADC meant no audio data input, so that idea got scrapped.

In short, the code submitted is basically just example code to blink an LED, written almost entirely by TI. Pictured is the Schmartboard connected to an ARM JTAG programmer for programming, and a TI Launchpad for power and clock. Its not visible in the picture, but the Schmartboard is also connected to one of the LEDs on the launchpad, and that LED was used to verify everything was working (by blinking).

I know this probably seems like a joke entry, but I would like to thank Schmartboard and its partners for hosting this competition. It gave me the motivation to learn about ARM (and a bit of MSP430 along the way).