1. Main Objective
   1. To determine what, if any, effect radio-frequency emissions from external sources have on clock drift.
      1. What kind of clock?
      2. Is specifying external sources needed?
      3. We need to be more specific on “radio-frequency emissions”
   2. To determine the effects of common radio-frequency emissions on external sources on clock drift.
   3. To determine the effect on clock drift due to common frequencies and corresponding power densities of radio-frequency emissions.
      1. I think we should look into a set of power densities for each frequency. This way we could better determine what affects clock drift more: the frequency, the power of that frequency, and the trend that incorporates both. This would account for real world scenarios where devices will experience various frequencies, but will receive radiation at various distances from the source. This is the equivalent of varying power density.
   4. To establish the relationship between internal RC oscillator frequency drift and radio frequency emissions.
      1. Is this too indirect?
   5. To establish the relationship between internal RC oscillator frequency drift and the energy…blah blah
2. Secondary Objectives
   1. Preparation
      1. Choose 4 popular vendors
         1. Microchip Technologies (PIC), Texas Instruments, STMicroelectronics, NXP Semiconductor.
      2. Choose 5 part numbers
         1. What are they?
            1. What is the justification of our selection method

Popularity and flexibility of devices

* + 1. To establish stable clock sources for each device being tested.
       1. Custom boards. Consistent firmware/software.
       2. Find a method to determine the stability of clock sources under test.
    2. To establish a stable system for each device
       1. External circuitry will not affect
  1. Controlling factors during the experiment to ensure valid data.
     1. To eliminate temperature factors while testing devices.
     2. To eliminate ambient radiation from the testing environment.
        1. Environment RF radiation, environment light radiation, EMI from power sources.
     3. To eliminate mechanical (sound) energy from affecting
     4. To prevent the RF radiation source from affecting test equipment to preserve the integrity of data.
  2. The experiment
     1. To determine a control for the experiment of internal RC oscillator drift by testing 3 units of 5 part numbers from 4 popular vendors

1. The problem and significance of proposed work
   1. The problem
      1. Without data on the effects of RF emissions on internal RC oscillators, clock source selection is based on a conservative approach to unknown.
   2. Significance of proposed work
      1. Collecting data on these effects will allow a method for effectively choosing a clock source based known risk and performance.
      2. Removing unknown aspects of MCU internal RC oscillators will increase their viability as a device clock source. This will ultimately lead to the potential of reducing cost and board space by removing the need for an external oscillator.
      3. To find new data on internal RC oscillators
         1. To determine the viability of the use of internal RC oscillators on devices potentially going into space.
         2. Satellites!
         3. To determine the viability of the use of internal RC oscillators on devices operating near sources of RF emissions.

* Notes
  + For objectives
    - What the objective is
    - Then how to do it in the research plan
  + For objectives
    - We are testing MCU
      * “To measure clock drift by X”
      * “To establish an accurate method of measuring clock drift”