IoT Microcontroller Development Evaluation Kit

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Executive Summary

Our project is to create a small form-factor, open source microcontroller development and evaluation kit that can communicate with the Internet of Things. In addition, the board will come with additional accessories to aide the developer's experience with the unit. The product must adhere to the following requirements.

1. **General Functional and Mechanical Requirements**
   1.1. Product MUST have an open-source PCB layout and bill of materials
   1.2. Product MUST have a Quick Start Guide paper insertion with a pinout diagram, instructions on how to obtain software demos and PCB layout, and a list of materials.
   1.3. Product MUST transmit sensor data via Wi-Fi to cloud service at no less than 1Mbps
   1.4. Product MUST transmit sensor data via BLE, at least 1Mbps, to the mobile phone app
   1.5. Product MUST cost under $50 to manufacture
   1.6. Product MUST include a plastic chassis with tool-less assembly and disassembly
2. **User Interface Requirements**
   2.1. Product MUST have a user-programmable LED and push button
   2.2. Product MUST have an LED to display Wi-Fi connection status
   2.3. Product MUST have power status LED
3. **Hardware Requirements**
   3.1. Product MUST use micro-USB connector for power
   3.2. Product MUST use TI MCU
   3.3. Product MUST have clear silkscreen labeling of important board markings for users
   3.4. Product MUST have headers for hardware debugger (MSP-FET)
   3.5. Product MUST include 3 Seeed Grove connectors, 2 designed for analog signals and 1 for digital I²C signals
4. **Software Requirements**
   4.1. Product MUST have at least 5 code examples with documentation
   4.2. Code examples MUST be available for Code Composer Studio
   4.3. Code examples MUST include blinking LED, button input, and wireless communication initialization
   4.4. Cloud Service MUST show data from all sensors and define which sensor ports are not in use.
   4.5. Mobile Application MUST show real-time sensor readings