**BME Capstone Design Project Weekly Progress Report**

**Project Title:** KK01: Design of extremely small satellite

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**Reporting Week:** Jan 14 - Jan 18

**Project Manager of the Week:** Ho Yin Samuel Yeung

**Tasks Outlined in Previous Progress Report:**

* Complete proof-of-concept design for LoRa Radar satellite
* Establish orders for design
* Create test plans and procedures for performance testing

**Progress made in Reporting Week:**

* Establish orders for design

The main goals for this week was to conduct as much system design as possible, as well as determining a cost of materials needed for alternative radar design from MIT.

During system conceptualization, issues occured due to equipment limitations. Due to the long operating distance of the modules, lab tests showed that attempts to attenuate signal with RF shielding equipment (a combination of grounded faraday cages, aluminum foil, ceramic plates, etc.) were unsuccessful. Therefore, without two antennas (one highly directive antenna for transmission and another dish antenna for reflected signal reception), establishing proof of concept within time limit was not possible.

Therefore, a suggestion was put forth to acquire RF components of SAR design from MIT, which had a sum total ranging $300. However, due to the cost of the system and limitations in student self-funding, a meeting had to be held with Dr. Kumar. After meeting with Dr. Kumar, both our team and Dr. Kumar mutually agreed to divert all efforts towards the professor’s tubesat project, a 2U satellite design that is expected to be launched soon.

While the system framework has already been established, significant issues still remain on the system to be fixed such as a communication protocol for secure packet transmission, proper recording of digital payload (consisting of a jpeg image file taken from the onboard camera) and a field test of wireless modem at rated specifications.

**Tasks for Next Week:**

* Meet up with Tubesat Engineering Team
* Determine workload for each issue found on Tubesat