ECE Capstone program
Spring 2017
Summary Project info

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number: S18-18

2. Project title (as will appear on the poster): Narrowband Energy Harvester

3. Team members: Kenong Liu(POC), Zhen Du, Kexin Yang, Zetian Qiu
4. Adviser(s) name(s): Yanyong Zhang, Richard Howard, Xiaoran Fan

5. Up to 10 keywords that will help to classify the project:
Converting narrowband radio frequency to direct current.

6. Project abstract (up to 200 words) to be shared with judges:

In our Capstone design project, we are going to make a Narrowband Power Harvester. The power harvester is an RF energy-harvesting device that can convert RF to DC and store it in a capacitor, which is usually use in wireless charging or providing power to device without current leads. Nowadays, the commercial available harvester is usually wideband harvester and targeting on low frequencies, but the Narrowband harvester we are designing is target on frequency at 1GHz. To make a Narrowband Harvester, the most important parts are transformer and voltage doubler. For transformer, it is used as a converter between RF and DC. Thus RF signal can be turned into DC voltage. In voltage doubler part, it's main use is double the transformed DC voltage into two times or above. So that the value of voltage can fulfill the demand of device. Comparing with commercial wideband power harvesters, our RF narrowband power harvester will be able to optimize the conversion efficiency up to 70%-90% for a specific frequency, which wideband power harvester will not reach.