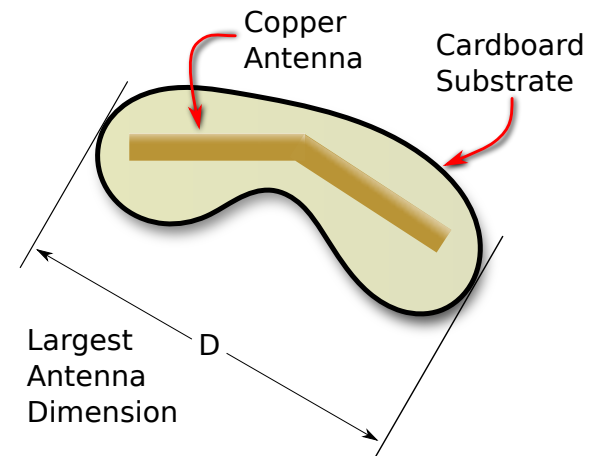


# IEEE RFID 2013 STUDENT COMPETITION: Rectenna Shootout!

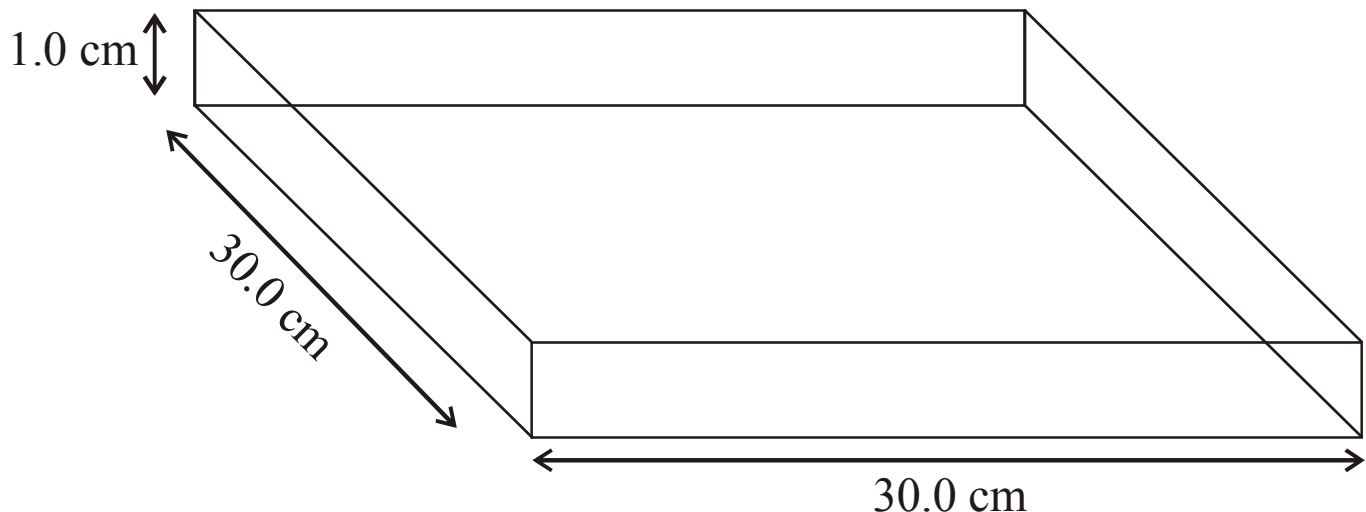
Student teams of any size may submit a design for a custom 915 MHz LED rectenna (antenna + RF charge pump + LED) for the IEEE RFID 2013 conference. Cash prize for the *smallest device* that can light up an LED at the furthest distance away from a 915 MHz continuous wave source. Devices must be able to operate at least 0.5m from the source, and will be evaluated using the ratio of farthest LED operating distance ( $r$ ) to largest antenna dimension ( $D$ ) ( $r^{LED}/D_{ant.}$ ), largest ratio wins!

The rectenna must be constructed exclusively from the following items:

- Avago Schottky Diodes ([http://www.avagotech.com/pages/en/rf\\_microwave/diodes/schottky/hsms-2862/](http://www.avagotech.com/pages/en/rf_microwave/diodes/schottky/hsms-2862/))
- Copper tape (any dimension and amount)
- Solder or cold Solder pen
- Cardboard (i.e. "corrugated fiberboard" see: [http://en.wikipedia.org/wiki/Corrugated\\_fiberboard](http://en.wikipedia.org/wiki/Corrugated_fiberboard)) tape, and/or glue
- Passive microwave capacitors (any value)
- Green LED (Low-Power CMD28-21 series, available from Digikey)



Any passive antenna type may be used, with the requirement that the entire rectenna must fit within a box with the following dimensions:



The competition will be conducted using a 915 MHz signal source connected to a directional antenna with linear polarization. A judge will determine the absolute illumination range and largest antenna dimension, but the team may specify the orientation with which to test their rectenna. Each rectenna entry must be accompanied by a unique student registration from a team member; no multiple entries per registrant.

For further information, email Stewart Thomas at [stewart.thomas@duke.edu](mailto:stewart.thomas@duke.edu)

Useful references: <http://www.propagation.gatech.edu/ECE4370/projects/projects.html>