Introduction
Electricity is today a necessity of modern life whatever supporting household product or mass transportation. Imagine a future where wireless electricity makes every product more convenient, reliable, and user-friendly. Cell phones, game controllers, laptop computers, mobile robots, even electric vehicles capable of re-charging themselves without being plugged in. Flat screen TV’s and digital picture frames that hang on the wall without requiring a wire and plug for power. Medical devices made more reliable by eliminating trouble wiring and replaceable batteries. Our project is based on the research which is the usage of wireless electricity transmission to develop a new type of power system, and which will achieve all household electric products without power line in the future.

Objective
Our project targets on the electronic device which cannot connect the power line nor replace batteries easily, such as waterproof products and inserted health instrument. Therefore those products can operate incessantly without the risk of black out.

Advantage
- Continuous wireless electricity
- No cable wrapped

Methodology
Our project is based on the theorem of transformer. The primary coil is connected to an Alternative Current (AC) source and a varying magnetic flux is generated. The varying magnetic field through the secondary coil and then induces electromagnetic force (EMF) or voltage. If a load is connected to the secondary side, an electric current will flow in the secondary side and electrical energy will be transferred from the primary side through the transformer to the load.

System block diagram
Transmitter: sine wave generator, a class B amplifier, an impedance matching filter and a transmitting antenna. Receiver: a receiving antenna, an impedance matching filter, an AC/DC converter and a DC/AC converter.

Operation
- Sine wave generator: a Wien bridge oscillator, minimizes the influence during the power transmission.
- Class AB amplifier: increases the power before transmission.
- Impedance matching: maximize the power transfer.
- Antennas: power transmitting and receiving coupling.
- Converters: converts AC to usable and stable DC.

Result
It is measured by connecting a resistor 1.2k ohm at the antenna of receiver where the input peak-to-peak voltage is 20V and the peak-to-peak current is 1A. However, the input voltage and the input current have phase different. The output is a sinusoidal after impedance matching so the peak-to-peak voltage Vpp and the peak-to-peak current Ip are recorded according to the distance between two antennas D.

Conclusion
Our project generates about 100kHz frequency to induce magnetic flux in the antenna of transmitter for the power transmission. The efficiency is dependent on the distance between the transmitter and the receiver. The magnetic flux linkage is large when the distance is long. After apart 5cm, the received power drops dramatically. After apart 9cm, the transmitting power vanishes.