

# Design and Implementation of Wireless Power Transmission System for Indoor Applications

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**Abstract:** In this paper, design and successfully implementation of a wireless power transmission system to be used in a conference room. The system will work by using resonant coils to transmit power from an AC line in the ceiling to a pad on the table. The pad will output DC voltages in order to charge computers and cell phones.

**Keywords:** Wireless Power Transmission System; Indoor Applications, Android Application Device

## I. INTRODUCTION

In the age of wireless communication and portable music players the demand for powering those devices wirelessly is ever prevalent. The advantages of portability and wireless communication are greatly hindered by the fact that the devices themselves must be plugged into the walls to charge. The next generation in portable devices is a device that receives power wirelessly. In our present electricity generation system we waste more than half of its resources. Especially the transmission and distribution losses are the main concern of the present power technology[1-7].

## II. PROPOSED ARCHITECTURE

The first step in wireless power is providing power to a computer charging pad wirelessly. The market for this device would be businesses with large conference rooms. The device would allow users to plug their phones and computers into the conference room table without large power bricks and cords running everywhere. The pads can conveniently be placed under the table and inside the ceiling so there are no visible wires that could ruin the aesthetic feel of the room. The ease of installation and convenience of this device would make the marketability of this product quite large and if finished could be seen in thousands of conference rooms. If the efficiency of coupling could be increased slightly further, wireless power transmission could become a standard means for charging a mobile device.



Fig 1: Block Diagram of the power supply system



Fig 2: Circuit Diagram of wireless power transmission system

Table 1:- Design Specifications

<b>Transmission Efficiency</b>	>30 %
<b>Overall Efficiency</b>	>25 %
<b>Output Voltage</b>	18 VDC $\pm$ 1.8 V 5 VDC $\pm$ .5 V
<b>Frequency</b>	Within 10 kHz of optimal
<b>Power Abilities</b>	Laptop and cell phone

Table 2:- Estimated Component Used

Part	Block
Current Sensing Resistor	Current Sensor
Current Sensor MOSFETS	Current Sensor
Diodes	DC Supply
Capacitor 1000uF	DC supply
Gate Driver	Gate drivers
Full-Bridge Inverter MOSFETs	Full-Bridge Inverter
700m Magnet Wire (20AWG)	Top and bottom coils
Scaffolding Wood	Top and bottom coils
Transformer	Transformer
Diode	Bottom Filter
Capacitor 1uF	Bottom Filter
Resistor 2.7K	Buck Converter
Buck Converter	Buck Converter
Capacitors 100uF, .01uF, and 470uF	Buck Converter
100uH Inductor	Buck Converter
Diode	Buck Converter

### III. CONCLUSION

In this work, the overall goal of this project is to design and successfully implement a wireless power transmission system to be used in a conference room. The system will work by using resonant coils to transmit power from an AC line in the ceiling to a pad on the table. The pad will output DC voltages in order to charge computers and cell phones.

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