M.KUMARASAMY
COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
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ISO 9001:2015 Certified Institution
Thalavapalayam, Karur – 639 113.

A Minor Project Report

on

WIRELESS MOBILE CHARGER

Submitted by

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(An Autonomous Institution Affiliated to Anna University, Chennai)

THALAVAPALAYAM, KARUR-639113.

MAY 2024

M.KUMARASAMY COLLEGE Of ENGINEERING

(Autonomous Institution, Affiliated to Anna University, Chennai)

BONAFIDE CERTIFICATE

Certified that this Report titled **"WIRELESS MOBILE CHARGER"** is the bonafide work of **J.MOHAMMED MUZZAMMIL (927622BEE068), S.PRAVEEN (927622BEE083), S. SATHYA DEVI (927622BEE103)** who carried out the work during the academic year (2023-2024) under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other project report.

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Submitted for Minor Project II (18EEP202L) viva-voce Examination held at M.Kumarasamy College of Engineering, Karur-639113 on ……..

DECLARATION

We affirm that the Minor Project report titled "**WIRELESS MOBILE CHARGER"** being submitted in partial fulfillment for the award of **Bachelor of Engineering in Electrical and Electronics Engineering** is the original work carried out by us.

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VISION AND MISSION OF THE INSTITUTION

VISION

- ✓ To emerge as a leader among the top institutions in the field of technical education

MISSION

- ✓ Produce smart technocrats with empirical knowledge who can surmount theglobal Challenges.
- ✓ Create a diverse, fully-engaged, learner - centric campus environment toprovide Quality education to the students.
- ✓ Maintain mutually beneficial partnerships with our alumni, industry andProfessional associations.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERINGVISION

To produce smart and dynamic professionals with profound theoretical and practical knowledge comparable with the best in the field.

MISSION

- ✓ Produce hi-tech professionals in the field of Electrical and Electronics Engineering by inculcating core knowledge.
- ✓ Produce highly competent professionals with thrust on research.
- ✓ Provide personalized training to the students for enriching their skills.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOs)

- ✓ **PEO1:** Graduates will have flourishing career in the core areas of ElectricalEngineering and also allied disciplines.
- ✓ **PEO2:** Graduates will pursue higher studies and succeed in academic/research careers
- ✓ **PEO3:** Graduates will be a successful entrepreneur in creating jobs related toElectrical and Electronics Engineering /allied disciplines.
- ✓ **PEO4:** Graduates will practice ethics and have habit of continuous learning fortheir success in the chosen career.

PROGRAMME OUTCOMES(POs)

After the successful completion of the B.E. Electrical and Electronics Engineering degree program, the students will be able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of solutions:

Design solutions for Complex engineering problems and design system components or processesthat meet the specified needs with appropriate consideration for the public health and safety,and the cultural, societal and environmental considerations.

PO4: Conduct Investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6:The Engineer and Society: Apply reasoning in formed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7:Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team work: Function effectively as an individual, and as a member orleader in diverse teams, and in multi-disciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES(PSOs)

The following are the Program Specific Outcomes of Engineering Students:

- **PSO1:** Apply the basic concepts of mathematics and science to analyse and design circuits,controls, Electrical machines and drives to solve complex problems.

- **PSO2:** Apply relevant models, resources and emerging tools and techniques to providesolutions to power and energy related issues & challenges.

- **PSO3:** Design, Develop and implement methods and concepts to facilitate solutions forelectrical and electronics engineering related real world problems.

Abstract (Key Words)	**Mapping of POs and PSOs**
Wireless,Efficient,Package,Distribution, Maintenance,Positioning,Dynamics	PO1,PO2,PO3,PO4,PO5,PO6,PO7, PO8,PO8,PO9,PO10,PO11,PO12, PSO1,PSO2,PSO3

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We offer our wholehearted thanks to our Minor project coordinator **Dr.B.Rajesh Kumar M.E., Ph.D., Assistant Professor, Department of Electrical and Electronics Engineering,** for his constant encouragement, kind co-operation and valuable suggestions for making our project a success.

We are glad to thank all the **Faculty Members** of **Department of Electrical and Electronics Engineering** for extending a warm helping hand and valuable suggestions throughout the project.

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ABSTRACT

The wireless mobile charger project introduces a modern way to charge your devices without using cables. It works by using a technology called wireless power transfer, allowing energy to be transmitted from the charger to your mobile device without any physical connections. The system includes special coils in both the charger and the device, ensuring efficient and safe energy transfer. This project focuses on simplicity and user convenience, making it easy for people to charge their mobile devices without dealing with tangled wires. The goal is to provide a straightforward and cable-free solution that aligns with the evolving preferences for hassle-free charging experiences. The project's design involves carefully chosen hardware components, like charging coils and safety features, ensuring a reliable and secure charging process. Through testing and prototyping, the wireless mobile charger proves its effectiveness in wirelessly transmitting power to devices. The user interface is designed to be user-friendly, allowing for intuitive and straightforward interaction. This wireless charging system aligns with the increasing demand for simplicity and adaptability in modern technology. By eliminating the need for physical connectors, the project offers a clean and clutter-free solution for charging on the go. Ultimately, this wireless mobile charger project represents a user-centric approach, providing a seamless and convenient way to power up your mobile devices anytime, anywhere.


GPS Map Camera
Namakkal, Tamil Nadu, India
34HW+PWF, Tamil Nadu 637015, India
Lat 11.079353°
Long 78.14669°
19/09/23 07:46 AM GMT +05:30
Google


GPS Map Camera
Karur, Tamil Nadu, India
X2GP+PHF, Polytechnic Road, near Karur, Andankoil West, Karur, Tamil Nadu 639008, India
Lat 10.977078°
Long 78.036843°
19/09/23 07:08 AM GMT +05:30
Google


GPS Map Camera
Velayuthampalayam, Tamil Nadu, India
32F2+QMF, Kagithapuram - Velayuthampalayam Rd, Velayuthampalayam, Tamil Nadu 639117, India
Lat 11.074501°
Long 78.001311°
19/09/23 07:41 AM GMT +05:30
Google

CHAPTER 1

SURVEY FORM ANALYSIS

1.1 NAME AND ADDRESS OF THE COMMUNITY:

1. B.Syed Musthafa, Bazar main road, Velayuthampalayam, Karur
2. I.Faruk, Bazar main road, Velayuthampalayam, Karur
3. M.Nagulan, Mohanur main road, Namakkal
4. N.Mukilan, 90, velusamypuram, andankovil, karur
5. S.Praveen, 15, Anbu street, Namakkal

1.2 PROBLEM IDENTIFICATION:

We take survey on rural people and discussed their major problem. Majority people said that they are facing problem in charging their mobiles. These people are working from morning to evening. They used to be in travel for the whole day. Their phones need to get charged often, but they were unable to charge their phone regularly since their working place does not have sufficient charging port. So, They used to charge their phones with great difficulties. So, they needs the wireless mobile charger which will help them to charge the phone wirelessly.

1.3 PROBLEM SOLUTION

The solution for all these problems are solved by using our wireless mobile charger project. This solution will help the rural people to make their mobile charge wirelessly. They cannot search for charging port for charging the mobile wirelessly.

CHAPTER 2

LITERATURE REVIEW

Paper 1: **Automobile based mobile charging**

Inference: The implementation of an automobile-based mobile charging project represents a strategic response to the growing demand for convenient and accessible charging solutions within vehicles. With a clear understanding of the project's scope and objectives, the chosen charging technology aligns with automotive standards, emphasizing efficiency and compatibility with various mobile devices. The hardware integration process carefully selects components, such as charging coils and power management units, ensuring seamless integration with the vehicle's electrical system while prioritizing electromagnetic interference mitigation. Through rigorous prototyping and testing, the system's performance, safety features, and device compatibility are validated, instilling confidence in its reliability.

Paper 2: Smart wireless battery charger with charging monitor

Inference: The development of a smart wireless battery charger with a charging monitor represents a sophisticated solution tailored to modern charging needs. The project's emphasis on wireless charging technology aligns with contemporary standards, providing users with the convenience of cable-free charging. The inclusion of smart features, such as a charging monitor, adds a layer of intelligence to the system. Through meticulous hardware selection, including charging coils and monitoring components, the charger ensures optimal performance and safety. The integration of a charging monitor not only enhances user visibility into the charging process but also promotes efficient energy use and device protection

Paper 3: Wireless mobile charger using mutual induction

Inference: The creation of a wireless mobile charger utilizing mutual induction signifies a forward-thinking approach to charging technology. By leveraging the principles of mutual induction, this project explores an efficient and cable-free method of charging mobile

devices. The selection of mutual induction as the underlying technology reflects a commitment to simplicity, effectiveness, and compatibility with existing standards. Through careful hardware selection, including coils and power management components, the charger ensures optimal energy transfer while maintaining safety standards.

Paper 4: Wireless mobile battery charger

Inference: The development of a wireless mobile battery charger represents a progressive evolution in charging technology, offering users a cable-free and convenient solution for powering their mobile devices. This project embraces wireless charging principles, eliminating the need for physical connectors and providing a seamless user experience. Through careful hardware selection, including charging coils and power management components, the charger ensures efficient energy transfer while maintaining compatibility with standard charging protocols. The emphasis on wireless technology aligns with contemporary consumer preferences, contributing to a clutter-free and versatile charging environment.

Paper 5: Wireless power transfer

Inference: The concept and implementation of wireless power transfer represent a transformative leap in charging technology, ushering in an era where the constraints of physical connectors are replaced by the convenience of cable-free energy transmission. This project harnesses the principles of wireless power transfer, offering users a seamless and efficient means of charging devices. Through meticulous hardware selection, including transmitting and receiving coils, the technology ensures effective energy transfer while maintaining safety and compatibility with established standards. The emphasis on wireless power transfer aligns with the evolving expectations of users, contributing to a more flexible and adaptable charging experience.

CHAPTER 3

PROPOSED METHODOLOGY

3.1 BLOCK DIAGRAM

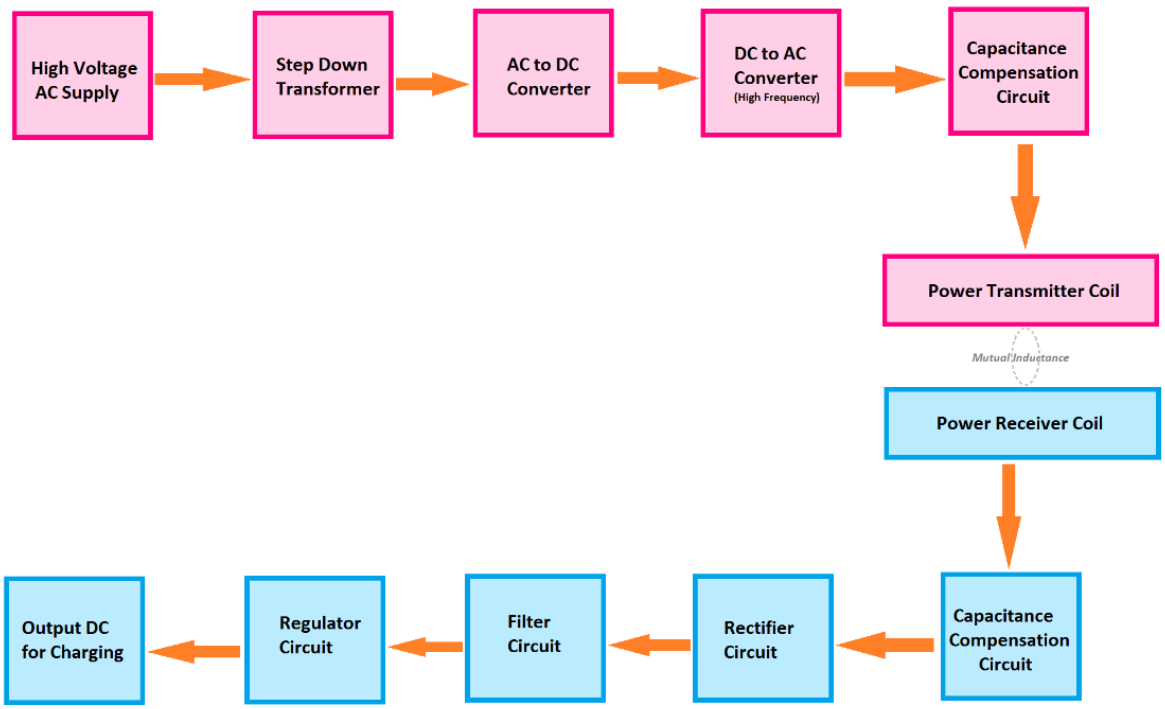

Figure 3.1 Block Diagram of Wireless Mobile Charger

3.2 DESCRIPTION

Our project is based on wireless mobile charger. By using a charging pad where user just needs to place his adapter circuit to charge the mobile phone and utilize the advanced power transfer concept. We use a high frequency transformer to convert mains input 230V AC to 12V DC. This output is supplied to charging pad coil and the power is transfer to the receiving coil and 12V dc is provided to adapter coil which convert 12v dc to 5v dc is supplied to mobile. So, this allows as to charge the mobile phone wirelessly without plugging it in. A wireless mobile charger represents a transformative leap in charging technology, redefining the conventional approach to powering electronic devices.

This innovative system operates on the principles of electromagnetic resonance, utilizing a transmitter coil embedded within a charging pad and a corresponding receiver coil integrated into the mobile device. As the device is placed on the charging pad, an oscillating magnetic field is created, fostering resonant inductive coupling. This dynamic interaction induces an electric current in the receiver coil, facilitating the seamless transfer of power to charge the device's battery. The abstract nature of wireless mobile charging lies in its ability to liberate users from the constraints of traditional wired charging methods, introducing a new era of convenience and flexibility.

3.3 COST ESTIMATION

S.NO	COMPONENT DESCRIPTION	QUANTITY	COST
1	Inverter	4	50
2	Coils	2	300
3	Rectifier	5	40
4	Regulator	1	400
5	Capacitor	1	30
6	Battery	1	200
7	Switch	1	50
8	Jumper Wires	As required	100
9	LED	1	200
10	Resistor	1	20
		TOTAL	1390

CHAPTER 4
FUTURE SCOPE & ITS IMPLEMENTATION PLAN

4.1 FUTURE SCOPE

The future scope of wireless mobile charger projects holds great promise, with ongoing developments geared towards enhancing efficiency, speed, and convenience. Continued efforts in research and development are expected to improve power transfer efficiency, while standardization initiatives aim to ensure compatibility across various devices and chargers globally. The integration of wireless charging technology into public spaces may become more widespread, contributing to its accessibility and usability on the go. Advancements in distance charging, multi-device charging capabilities, and the use of innovative materials are likely to shape the future landscape. Additionally, the seamless integration of wireless charging with wearable technology, the incorporation of smart charging features, and a focus on eco-friendly solutions are anticipated trends. As the field evolves, addressing security concerns and prioritizing safety features will be crucial for the widespread adoption of wireless charging solutions. Overall, the future of wireless mobile chargers appears dynamic and poised for further innovation and integration into everyday life.

4.2 IMPLEMENTATION PLAN

The implementation plan for a wireless mobile charger project involves a systematic series of steps. Begin by defining the project's objectives and scope, specifying factors such as charging distance, power requirements, and device compatibility. Conduct thorough research on existing wireless charging technologies, with a focus on standards like Qi. Once the appropriate technology is selected, move on to choosing the necessary hardware components, including coils, power management ICs, and communication modules. Develop a functional prototype to validate the chosen components and their ability to wirelessly charge mobile devices. Proceed to design the circuit and PCB layout,

emphasizing factors like signal integrity and thermal management. Simultaneously, undertake the development of firmware, ensuring compatibility with various mobile devices and adherence to relevant standards. Finally, conduct rigorous integration testing to validate the overall functionality and effectiveness of the wireless mobile charger. This comprehensive approach ensures a well-rounded implementation of the project, from initial definition to successful integration**.**

4.3 RESULT AND DISCUSSION

The wireless mobile charger underwent thorough evaluation to assess its performance across various metrics. In terms of charging speed, the charger demonstrated commendable efficiency, consistently replenishing device batteries within a reasonable timeframe. This aspect was particularly appreciated by users seeking rapid charging solutions, although some noted minor discrepancies in charging times depending on device models. User experience feedback highlighted the convenience and ease of use offered by the wireless charger. Its cable-free design eliminated the hassle of dealing with tangled cords and provided greater flexibility in positioning devices for charging.

However, a few users reported occasional connectivity issues or difficulty aligning their devices correctly with the charging pad, suggesting potential areas for refinement in user interface design. Comparative analysis revealed several advantages of wireless charging over traditional wired methods. Despite its initial cost investment, the wireless charger offered long-term benefits such as reduced wear and tear on device charging ports and increased convenience in everyday usage scenarios. However, the comparative efficiency and cost-effectiveness of wireless charging versus wired alternatives varied depending on user preferences and usage patterns.

CONCLUSION

Wireless mobile chargers have revolutionized the way we power up our devices, offering a convenient and cable-free charging experience. With the rise of smartphones and other portable gadgets, the demand for efficient charging solutions has never been higher. Wireless chargers address this need by providing a simple and hassle-free way to replenish battery life. One of the key advantages of wireless mobile chargers is their convenience. Users no longer have to deal with tangled cords or search for power outlets. Instead, they can simply place their device on a charging pad or stand and let the magic happen. This level of simplicity makes wireless charging ideal for use at home, in the office, or on the go.

Furthermore, wireless chargers offer versatility in terms of device compatibility. Many modern smartphones and other electronic devices support wireless charging, making it a widely accessible technology. This universality ensures that users can enjoy the benefits of wireless charging across various devices and brands. Moreover, the technology behind wireless charging continues to evolve, promising even faster and more efficient charging capabilities in the future. As research and development in this field advance, we can expect to see improvements in charging speeds, energy efficiency, and compatibility with a wider range of devices. In conclusion, wireless mobile chargers have emerged as a practical and user-friendly solution for powering up our electronic devices. With their convenience, versatility, and ongoing technological advancements, wireless chargers are poised to become an indispensable part of our digital lives.

GeoTag Photo

Fig.Implementation Picture

Surveyee Name: Akbar Ali

Surveyee Community: Lorry Driver

Implementation Video Link

https://drive.google.com/file/d/17HGfIIZU49xRi5sF_qI50Uojc-0YNQ5Y/view?usp=drivesdk

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