

Design of a Wireless Battery Charger for Cellular Phone

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ABSTRACT

This paper presents about the identification of circuit with a new technique of charging the lithium-ion battery for a Cellular phone using wireless. Inductive Power Transfer (IPT) refers to the concept of transferring electrical power between two isolated circuits across an air gap. IPT system can be divided into two parts; primary and secondary. The primary side (Transmitter) of the system is made up of a forward resonant converter and a coil. This power supply produces a high frequency sinusoidal current in the coil. The secondary side or receiver has a smaller coil, and a converter to produce a DC voltage. The primary circuit was set up as the charger unit with the winding coil which have different shape and structure compared to the secondary circuit respectively, which is adopted as a wireless energy transfer device. Primary circuit act as the transmitter transfer sufficient inductive power to the secondary circuit which become as the receiver. The secondary side is in the telephone unit received enough power to charge the cellular phone. The energy power transfer between these primary and secondary circuit is verified from the experiment result. The analysis of the primary side of circuit with is performed and the design optimization is presented. A simple circuit for secondary side for battery charging is presented and the analysis is presented.

Keywords—Inductive power transfer (IPT), lithium-ion battery, primary circuit (Transmitter), secondary circuit (Receiver)

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

As the number of portable and mobile devices increases – phones, digital assistants, laptops, MP3 players, digital cameras, and GPS units – they all need to be charged, using different adaptors specific to each device. In future the system could be used to charge any of these just by sitting devices with a small built-in pickup onto the charger. A mobile phone also known as a cellular phone, cell phone and a hand phone is a device that can make and receive telephone calls over a radio link whilst moving around a wide geographic area. It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone network. By contrast, a cordless telephone is used only within the short range of a single, private base station. Millions of people in the Malaysia and around the world use cellular phones. They are such great gadgets which can use to talk to anyone on the planet from just about anywhere. These days, cell phones provide an incredible array of functions, and new ones are being added at a breakneck pace. Depending on the cell-phone model, we can store contact information, make task or to-do lists, keep track of appointments and set reminders, use the built-in calculator for simple math, send or receive e-mail, get information (news, entertainment, stock quotes) from the Internet, play games, watch TV, send text messages and also integrate other devices such as PDAs, MP3 players and GPS receivers. Cellular telephone technology became commercially available in the 1980's. Since then, it has been like a snowball rolling downhill, ever increasing in the number of users and the speed at which the technology advances. The most common way to charge rechargeable battery of the movable telephone is to use a traditional charger, which connects power supply to the battery located in the movable telephone.