

Wireless Charger Networking for Mobile Devices using Bluetooth Technologies

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Abstract — Electrical devices are used for the purpose of energy replenishment. Wireless charging technology has been significantly advanced in term of functionality. Wireless charging is a technique of transmitting power through an air gap to facilitate information collection and control. The wireless charger technology enables the sensor implemented body network. In recent years, the adoption of wireless network in the corporate environment are increased. Many enterprises have moved to wireless networks, because of the low cost in the wireless devices and expediency of using wireless networks. Even large corporations need to consider wide use of wireless networks.

Keywords — *Wireless Charger Technology; Transmitting Power; Resonant Magnetic Coupling.*

1. Introduction

Wireless charging technology enables wireless power transfer from a power source. The technology provides convenience and better user experience. Wireless charging is rapidly evolving from theories toward standard and adopted a commercial product especially mobile phones and portable devices [1]. Wireless charging avoids over charging problem and minimizing energy cost. For example, Samsung, Apple and Huawei. Wireless Power Technology is emerging as a practical solution for providing energy for devices at remote distance [2]. This paper is focus on the inductively coupled wireless power transfer technology. It provides a safe, efficient, and convenient method of transferring power to remote standard devices, or recharging small devices. This revolves around the principle of Resonant Magnetic Coupling (RMC), which can be applied to acquire maximum transfer of power without contact. Thereby facilitating the individual to charge his electronic equipment efficiently. Nikola Tesla a Serbian American scientist, futurist precisely of the year 1856, used high electric fields to transfer large quantities of energy by ionizing the air in the environment, which eventually is a bad conductor, to plasma.

2. Existing System

There are certain wireless charges which simply cannot reach the same efficiency level as compared to traditional

ones, which can make the charging process effective. Nowadays charging is possible by plugging the charger into the wall and transferring signals from the charger to our mobiles. Additionally we must keep the device on the pad at all times and it cannot be moved.

2.1 Disadvantages

- Long distance charging is not supported.
- Fast charging is not supported.
- Older devices are not supported.
- Electro-magnetic field disturb charging.
- Wireless charging helps to develop water proof device easily.
- Major disadvantages are power loss and heat generation.

3. Proposed System

Wireless chargers are used to integrate with almost all cell phones, no matter the shape or size. There are certain devices other than smart phones which can be charged using the wireless charger. Today, we may have several smart phones in the same room. Usually most of them have the same chargers; there can still be a difference when it comes to apple and Android phones. Multiple device charging station will not only help us to charge our smart phones, but also other devices. We can reduce cables and international power adapters at our home and workplaces.

3.1 Advantages

- In the era of smart phones, wireless charger is a safe and most usable device by the smart phone users.
- It can be easily uses at workplace, at home or in the industry.
- It eliminates the wires which works with the help of electricity or have the physical electrical wires.
- Now smart phones are basically charged with wireless technology charger.
- People love wireless charging which saves their time and money.
- It increases the production and value of wireless charger

4. Methodology

Network interconnecting devices are used in between two small premises to reach a person. For example, invisible infra red light and Bluetooth radio interconnects a headphone to a laptop by the virtue of Wireless Personal Area Network (WPAN). With the installation of Wi-Fi into customer electronic devices, the Wi-Fi Personal Area Networks are commonly encountered. The simplest wireless distribution method used to interconnect between two or more devices, provide connection to internet through an access point. Orthogonal Frequency Division Multiplexing (OFDM) or spread-spectrum technologies arrives clients freedom to move between local coverage areas, while remaining areas are connected to the Local Area Network (LAN) [3]. LAN data transfer speed is typically 10 megabits per second for Ethernet and 1 gigabits per second for Gigabit Ethernet. The wireless network is required for connecting high speed wireless LANs connection for geographically close that situates anywhere in a few dozen kilometres. The network grants two or more nodes to communicate to each other which belong to the same LAN. The set up makes use of routers or switches for connecting with high-speed links such as fibre optic cables. Worldwide Interoperability for Microwave Access (Wi-MAX) described as 802.16 standards by the IEEE is a type of WMAN [4] [5].

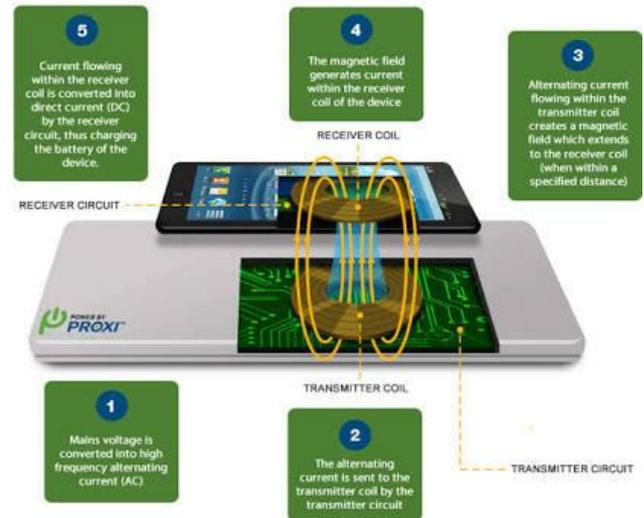


Fig. 3: Wireless Circuit

5. Implementation

WAN is the wireless network that usually covers large outdoor areas. The speed of wireless network depends on the expense of the connection that raises with increasing distance. This could be used for interconnecting various branch offices of a business to the head office or for the public internet access system. Developed on 2.4GHz band, these systems usually contain access points, base station gateways and wireless bridging relays. Their connectivity with renewable source of energy makes them stand-alone systems. The most commonly available WAN is internet.

5.1 Mobile Device Networks

The advent of smart phones have added a new dimension in telecommunications, referred as “Mobile communication”, today’s telephones are not meant to converse only but to carry data also [6].

5.2 Global System for Mobile Communications

Global System for Mobile Communications is categorized as the base station system, the operation system, support system and the switching system. The mobile phones are firstly connected to the base station system which institute a connection. Later the established connection between operation and station connects to the switching station where the call is made to the exact user.

Personal Communications Service (PCS) is a radio band that is employed in South Asia and North America. The first PCS service was triggered by Sprint.

Digital Advanced Mobile Phone Service (D-AMPS) is the upgraded version of Advanced Mobile Phone Service (AMPS) that is faded away due to technological advancements.

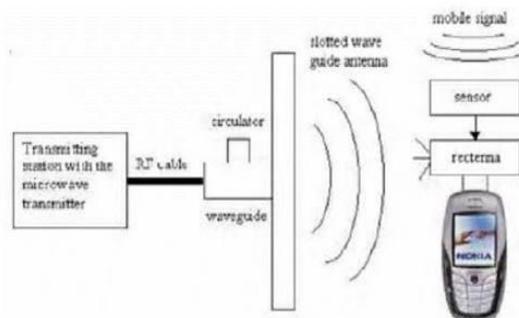


Fig. 1: Bluetooth

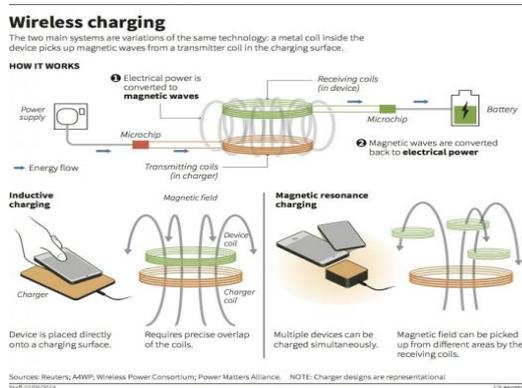


Fig.2: Wireless charging

Tiny Area Network (TAN) and Campus Area Networks (CANs) are two other types of networks. TAN is similar to LAN but comparatively smaller (two to three machines) where CAN resemble Metropolitan Area Network (MAN) with limited bandwidth between each LAN network.

5.3 The Utility of Wireless Networks

The development of wireless networks is still in progress as the usage is rapidly growing. Wired Equivalent Privacy (WEP) as well as firewalls could be used for securing the network. Wireless networks are the future of global village.

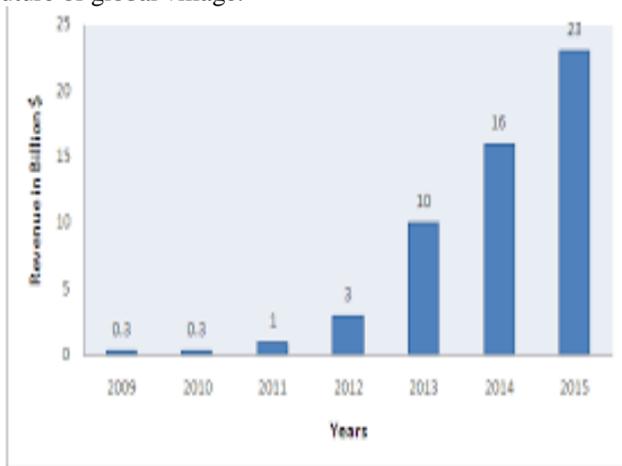


Fig.5: Wireless charging revenue forecast

6. Conclusion

Wireless charging is much more than cutting the cord. The expansion of wireless charging technology resides in ecosystem building. Room for any suboptimal user experiences to magnify any health or safety related concerns. The ultimate goal of wireless charging is to empower world, the best is yet to come. This method provides to great advantages to the mobile phone users to carry their phones anywhere to facilitate charging. The mobile phone sensors can supply a new dimension to the exposure of mobile phones.

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