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Resource shared based framework for integration of competing wireless power transfer standards

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Propelled by the needs of smart devices and wearable electronics the fiction of wireless power charging will soon become a reality. There are three competing wireless power standard, Qi, PMA and Rezence, currently being used for providing viable consumer solutions. These competing standards use tightly coupled, non-resonant, inductive coupling or loosely coupled, resonant inductive coupling method for wireless power transfer. To establish power transfer each standard employs a different communication system and strategy. The difference in underlying technology forces the consumers to choose not based on the merit of the technologies, but based on the preferences made by vendors and service providers. With major manufacturers like Samsung, Sony, and LG, being the members of all the industry groups, cross-platform solutions may be available. However, the attempt to provide multi-mechanism solution operating in different wavelength, integration of Qi (100-205 KHz), PMA (277-357 KHz) and Rezence (6.78 MHz) will require the design of wide frequency range coupling circuits, adaptive antenna mechanism, isolation circuits and multiple communication sub-section native to respective charging mechanism. Finally the coupled-inductor acts as frequency-selective channel with additive white Gaussian noise. These conflicting requirements often violate the primary design goal of area and power consumption optimization. Through this discussion different design aspects for integrating multiple wireless charging standards are addressed. Various standards are compared with respect to their efficiency, cost and noise models. Finally, a resource sharing based framework is presented for the integration of competing standards in a single system.

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Wide band 6.1 to 10.1 GHz antenna implementation using 8 elements log-periodic technique

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As the technology is progressing, size of the objects is shrinking and need for compact size efficient devices increases. In the field of antenna designing there is a need of developing compact and light weight antennas. Due to the development of new algorithms and techniques in certain areas e.g. frequency hopping in communication, operating frequencies of the setup also keeps on changing, antenna needs to radiate efficiently in all desired frequencies. In this regard development of wide band antennas always remained the focus of research. This work addresses issue of bandwidth and describes the design, simulation and fabrication of 6.1 to 10.1GHZ, 08 element wideband log periodic antenna. It is a micro strip based antenna which is designed and simulated in Momentum – an EM tool of Agilent's Advance Design System (ADS). The antenna is then fabricated and its characteristics such as bandwidth, return loss and VSWR are measured and compared with the simulated results.

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