

BATTERY-LESS REMOTE CONTROLLER

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Remote Controllers are responsible for more than 20M battery uses each year, only in Portugal. Wireless Power Transmission (WPT) is a technical solution to remove completely the batteries from the remote controller.

This research work describes a novel eco-friendly battery-less remote control system based on a multi-RFID scheme. The proposed remote control device does not require the use of batteries or other installed power source. The controlled device (e.g. a TV, a game console or a garage door) incorporates a reader system that remotely powers up the remote controller device and communicates with it in the UHF band. The concept underneath this idea is based on the Tesla concepts of energy transmission using electromagnetic waves.

The concept of WPT applied to this scenario implies that both energy and information are sent wirelessly, and this will imply that the remote controller is energized and communicates back the ID of the pressed button back to the device to control.

The battery-less remote controller incorporates a plurality of N passive RFID chips/tags, N keys/switches and a multi-port microstrip network specially conceived to interconnect the various RFID chips.

Each remote controller's key is associated with an RFID with an Unique Identifier (UID), which allows the device to be controlled to identify the key pressed by the user. The microstrip network combined with the switches ensures proper interconnection between the various chips allowing them to share the same antenna in such way that only the chip associated with the pressed key is read by the RFID reader.

The research group related to this experiment is pursuing this work further in order to reduce also the energy being sent to the air, and thus the overall energy efficiency of the system.

More information can be gathered in <http://radiosystems.av.it.pt>

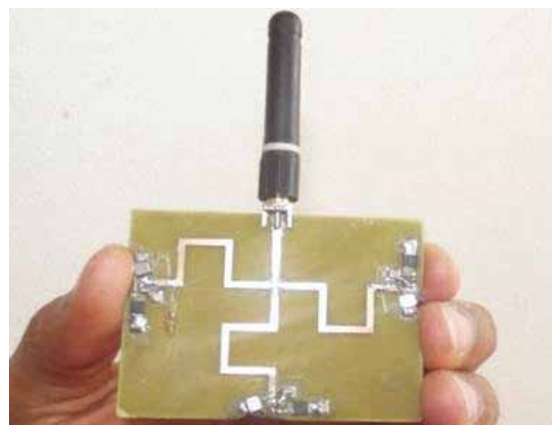


FIGURE 1

Overall remote control prototype, including the fixed structure near the TV receiver.

FIGURE 2

Battery-less remote control using Wireless power transmission, 3 button remote prototype.