PROTECTIVE SCHEME FOR NFC DEVICES WHEN WIRELESS CHARGING IS ENABLED

HP INC
Protective Scheme for NFC Devices when Wireless Charging is Enabled

Abstract: A breaker circuit in a mobile electronic device protects NFC components in the device from radiated power from a charging mat being used to wirelessly recharge the device.
This disclosure relates to the field of computer systems.

A technique is disclosed that protects NFC modules and NFC cards when a wireless charging mat is enabled.

Many computer systems, particularly small, mobile devices such as notebooks, tablets, and smartphones, implement near field communication (NFC) capability. The chip set used to implement NFC in some devices has a radiated immunity level of only about 6 volts. It would be advantageous if the batteries of these devices could be recharged wirelessly, as this would eliminate the use of power cords and power adaptors for each device, and would be faster and simpler to set up. One type of wireless charger is a wireless charging mat onto which the devices can be placed for recharging. However, some charging mats have a power transmission unit which radiates power at a 20 volt level to a power receiving unit in the device. The NFC chip set in the device could be damaged by exposure to this high a radiated power level in as little as 2 minutes.

According to the present disclosure, a breaker circuit is included in a device that implements wireless charging as well as NFC capability, and that uses the NFC chip set and an NFC antenna. The breaker circuit is a voltage sensor with a level of 5.5 volts maximum on the NFC signals (TX1, TX2, RXP, RXN), and on the Antenna 1 and 2 signals.

When the voltage sensor signals that the specified voltage level has been exceeded, and/or when the device otherwise detects that it is being wirelessly charged, the CPU of the device quickly disables, disconnects, and/or removes power from the NFC components.

The disclosed technique is advantageously inexpensive and simple to implement in electronic devices using NFC.

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