Rancang bangun prototipe sistem daya telepon selular berbasis RF energy harvesting dan sel surya

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Abstrak

Penggunaan sel surya sebagai sumber catu daya bagi divais elektronik masih dibatasi cuaca dan pergantian siang malam. Di lain pihak, meskipun sangat menjanjikan, pemanfaatan energi dari sinyal RF (Radio Frequency) masih dibatasi rendahnya level daya yang tersedia. Penggunaan dua sumber ini sebagai sumber catu daya bagi satu divais elektronik berpotensi menghasilkan sumber catu daya yang mendukung portability, mobility dan availability.
Sistem RF energy harvesting dari sinyal RF frekuensi GSM 900 MHz menggunakan rangkaian voltage multiplier sebagai rectifier dan amplifier. Sistem charger berbasis sel surya menggunakan rangkaian voltage regulator untuk menghasilkan nilai tegangan yang stabil. Tegangan DC digunakan untuk men-charging baterai handphone.
.....Solar cell-based electronic applications are still limited by the availability of sunlight during the day time. While this is not a problem for RF (Radio Frequency) energy, its low power availabilty in the free space is the major issue that most applications must deal with. Using these two ambient energy sources to power the same device could lead to power sources that support portability and mobility applications.
This thesis proposes a design of RF energy harvesting system from 900 MHz GSM signal with voltage multiplier circuit to rectify and amplify the input signal. The solar cell-based system with voltage regulator is required in the system to produce a stable value of DC voltage from solar cell. The produced DC voltage will be used to charge a mobile phone.