

## ECG Sensor

### Motivation

The recent introduction of wireless body sensor network has made a great impact on healthcare. Such a system not only provides health monitoring to hospital patients but also keeps chronically ill patients from worsening at home. This project is aimed to develop a compact wearable Electrocardiogram (ECG) device that is able to monitor the patients 24 hours a day and 7 days a week. (64 words)

### Objective

To design an ultra low power ECG-on-Chip and develop associated signal processing algorithm for healthcare applications. (16 words)

### Scope

One of the main issues in wearable ECG device is the motion artifact caused by movement of body. Such motion artifact causes severe distortions to the ECG signal and leads to unreadable or useless ECG. Computationally efficient digital signal processing algorithm will be developed to reduce the noise in the wearable ECG device. (53 words)

### Innovative Ideas

The traditional ECG device requires the electrodes being placed far from each other to generate sufficient large signal. With the system-on-chip approach, we hope to build a compact ECG device that integrates circuits and electrodes under one package. (38 words)

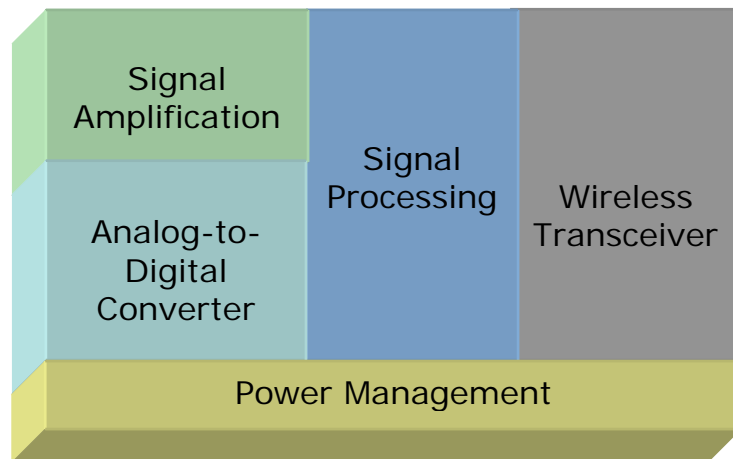
### Demonstrable Activities

A prototype of wireless ECG sensor (ECG-on-chip) built with chipset developed by Platform group and associated signal processing algorithm. (19 words)

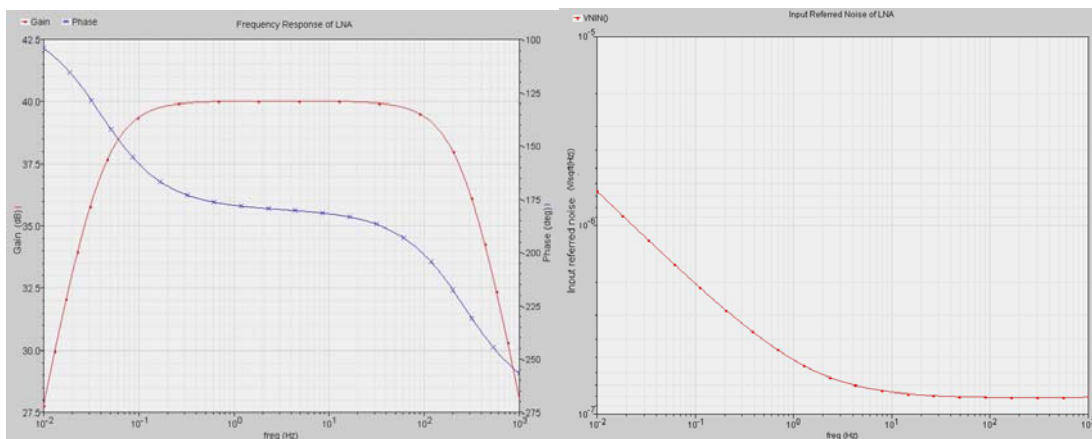
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**Fig. 1 Block diagram of the ECG-on-Chip**



**Fig. 2 Amplifier frequency response (left) and input-referred noise(right)**