

# **Wireless Smartphone Communication for Medical Telemetry Systems**

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The conventional monitoring technologies at the bedside in the hospital consist of a body-worn device and central monitoring station with wired connections. At the hospital settings, the patients' vital parameters such as blood pressure, ECG, temperature, oxygen saturation can easily be monitored through a nurse stationed at the central monitoring station. Although this technology offers unique features and timely patient monitoring and treatment for patients in the clinic, there is no technology to continually monitor the health conditions of the patients after they are released from the hospital. Development of wireless telehealth technologies is critical in providing a solution to this clinical need. Such devices that can provide the wireless telemetry consist of three parts; the sensor, associated electronics and the telemetry unit. In this study, we develop an alternate communication approach using wireless communication and new display technologies to assist healthcare providers in monitoring patients outside the clinic. Our main concentration will be the telemetry link and associated electronics therefore we chose a temperature sensor to show the validity and functionality of the device. More specifically, we investigate the efficiency and practicability for a wireless network in a two channel temperature monitoring system. Two wireless protocols were investigated: a Bluetooth (IEEE 802.15.1) ad-hoc network and a Wi-Fi (IEEE 802.11) ad-hoc network. To do so, two subsystems were designed: a sensor system and a display system. The sensor system consists of two thermometers and a wireless transmitter/receiver. The data will be communicated to the display system wirelessly. The display consists of a wireless transmitter/receiver and a iOS mobile device. The results concerning the efficacy and practicability of the designed system and the integration with a radiometer will be presented.