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Biomedical sensing data transmission using VLC systems

Ilyass Elataoui

University of Wollongong in Dubai, UAE

Visible light communication (VLC) systems uses commercial white LED devices can be used for both illumination and data transmission. The VLC system transmits digital signals wirelessly via the optical channel as light signals. Radio frequency (RF) communications using electromagnetic waves can create interference with medical instruments when used in biomedical and health applications. Hence visible light communication technology can be used safely for transmitting biomedical data. The white light emitted from light emitting diodes (LEDs) are used as carriers for the biomedical data such as ECG and PP signals. ON-OFF keying (OOK) modulation and other types of digital modulation techniques can be used to modulate the biomedical data into the visible light beam. The receiver circuit includes high speed photo detector and a demodulator to extract the data. Due to the lower bandwidth of ECG and PP signals, other medical information such the patient information can be multiplexed in the same system. Due to the wireless nature of the communication system, mobile health systems can be used in the healthcare sector. Their use will help in providing a solution to some of the problems in the health sector such as interference of RF waves with sensitive medical equipment, data transfer security, health-hazards associated with the exposure of radio frequency and microwaves level.

Biography

Ilyass Elataoui is in the final year of his Bachelor's Degree in Electrical Engineering at the University of Wollongong. His professional memberships include the following but not limited to; Institute of Electrical and Electronics Engineers (IEEE), and Engineers Australia.

ilyass@hotmail.com**Notes:**