

عنوان مقاله:

Design and Construction of the Receiver Section of a Multi-Channel Neural Signal Recording System Based on TDMA Architecture, Along with a User Interface

محل انتشار:

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خلاصه مقاله:

In this article, The receiver section of a wireless data transmission system is designed for the communication of neural signals. Neural signals from multiple points in the body are combined, forming the message signal for transmission using FM modulation. In the transmitter, seven channels are allocated for neural signals, along with one channel for synchronization with the receiver. By employing the Time Division Multiple Access (TDMA) technique, the message signal is prepared for transmission by combining these eight channels. The message is FM-modulated with a carrier wave frequency of approximately 80 to 110 megahertz and is then transmitted towards the receiver after amplification. The receiver antenna receives the signal and delivers it to the demodulator chip. After detection and amplification in the receiver, the message signal is sent to the computer via an intermediary circuit. The role of the intermediary circuit is to first digitize the analog data and then transmit the received data from the analog-to-digital converter output to the computer through one of the ports. Software is designed for the purpose of receiving data from the intermediary circuit. After receiving the data, this software separates the seven combined channels of neural signals from each other and performs operations such as displaying and storing the signals in various formats. The information can be utilized in other software programs such as MATLAB.

کلمات کلیدی:

Multi-channel neural signal recording, FM receiver, TDMA, intermediary circuit, user interface

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