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System Design of a Flexible 512-Channel Platform for Ultrasound Computer Tomography

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Breast cancer has become one of the primary diseases threatening women's health. Ultrasound computer tomography (USCT) has attracted many researchers'attention for its potential in early diagnosis of breast cancer. In USCT system, transducer with large number of elements are often be adopted[4-5]. Platform with large number of channels is needed, In this paper, we describes the system design of a 512-channel USCT platform.

(2) Material and Methods

The system architecture of the platform is shown in Fig. 1. The platform consists of a front-end subsystem and a data transmission and storage subsystem. Excitation, channel selection, signal digitization and data packing is done by the front-end subsystem. Data transmission, sequencing, storage and processing is done by the data transmission and storage subsystem.

(4) Discussion and Conclusion

The designed platform will be helpful for the algorithm research.

(3) Results

Table 1 summarizes the key technical features of the designed platform that we expected. Schematic design and PCB circuit design of the boards in the front-end subsystem have been almost completed, the hardware circuit debugging will be finish in three months. The performance of the data transmission and storage subsystem have been test. The sequential write can be up to 5000MB/S, greater than the maximum theoretical data rate of the front-end subsystem.

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