

Wireless ultrasound transducers help physicians

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Siemens Healthcare is introducing the Acuson Freestyle ultrasound system that features wireless transducers, eliminating the impediment of cables in ultrasound imaging. To enable this pioneering technology, the system brings to the market a large number of innovations, including acoustics, system architecture, radio design, miniaturization, and image processing. The development of wireless ultrasound is in line with the objectives of the Healthcare Sector's global initiative Agenda 2013, specifically in the areas of innovation and accessibility. The Acuson Freestyle system will expand ultrasound's use in interventional and therapeutic applications, where the technology provides numerous workflow and image quality advantages.

Siemens has presented the world's first ultrasound system with wireless transducers. The system's transducers, which can be easily operated with one hand, transmit ultrasound images via radio waves to the screen on the base console. The elimination of cables is particularly helpful in operations or during invasive procedures in which the needle visualization needs to be monitored using ultrasound technology. That's because transducer cables can obstruct the people who operate the machines, and despite their sterile protective coverings, the cables can pose a risk in terms of infections. The wireless Acuson Freestyle system transducers function reliably up to three meters from the console and are equipped with remote control buttons for adjusting the image settings. To make wireless data transmission possible, Siemens engineers sharply reduced the amount of data that must be transferred between the transducer and the console.

Imaging processes such as those based on x-rays and ultrasound are often utilized to monitor the instruments that are inserted into patients' bodies during an operation. These might include catheters that are guided through blood vessels to specific organs. Normally, the transducer is connected to the [ultrasound system](#) via a cable. This setup sharply restricts the transducer operator's freedom of movement. In addition, the controls on the ultrasound unit are not sterile and in some cases need to be operated by a second technician. Not surprisingly, physicians have been interested in wireless ultrasound for quite some time now.

Siemens uses a proprietary 8 GHz ultra-wideband radio technology to transmit data in order to prevent interference with other devices. To reduce the amount of data transferred between the transducer and the system without degrading image quality, the system uses synthetic aperture technology. With this technology, each individual pixel in the image is digitally focused once it's been transmitted to the console. As opposed to the traditional acoustic transmit focusing method, which requires users to manually focus on a region of interest, the Acuson

Freestyle system's synthetic focusing provides automatic uniform focusing throughout the entire field of view.

Provided by Siemens

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