ACUSON Sequoia 512 Ultrasound System

Advancing the science of ultrasound

SIEMENS

medical

Where ultra-premium performance begins

Beyond today's possibilities

Vision

Coherent Imaging Technologies

Innovative Transducer Technologies

DIMAQ Integrated Ultrasound Workstation

Advanced Imaging Technologies

Sequoia system technology not only sets the standard in ultrasound, but continuously raises it — on a single sustainable platform designed to create new opportunities for clinical excellence and synergistic technology migration.

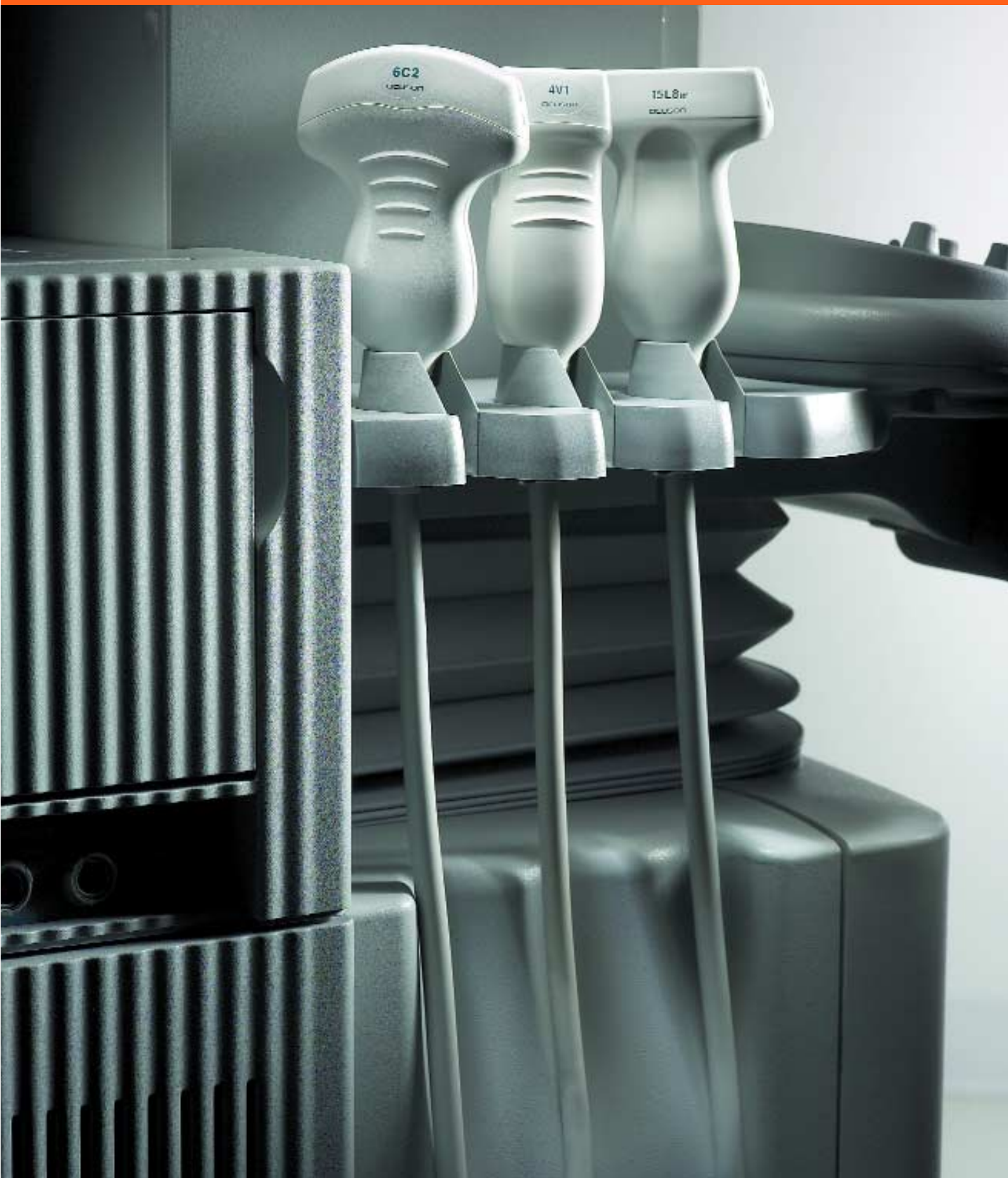
Consider the ultra-premium ACUSON Sequoia™ 512 ultrasound system. It is based on the four cornerstones of unparalleled system performance: Coherent Imaging Technologies; Innovative Transducer Technologies; DIMAQ™ integrated ultrasound workstation; and Advanced Imaging Technologies.

Now the Sequoia 512 system builds upon this proven foundation by offering even more significant, high-level imaging capabilities dedicated to ultrasound, including:

- High-density acoustic sampling
- Wider acoustic apertures
- Expanded bandwidth
- Precise control of the transmitted echo pulse
- New transducer technologies

The Sequoia 512 system brings the value of vision to the most challenging demands of ultrasound, delivering the real-world benefits of superior performance. Clinical innovation. Improved workflow. Technology for advanced imaging capabilities. And what is perhaps the greatest benefit of all: delivering Proven Outcomes.

Matching capabilities to needs



Technology

Sequoia™ matched response technology measures and adapts in real time to a patient's individual acoustic properties. This patient specific imaging philosophy matches transmit and receive functions through a unique "window into the body" for heightened clinical specificity, optimized diagnostic outcome and improved workflow efficiency. From the most difficult-to-image patient to the most complex clinical applications, the Sequoia system builds on a legacy of vision to offer ultra-premium performance features that meet the highly specialized needs of ultrasound today — while offering even greater clinical opportunity for tomorrow.

- **Coherent image formation** employs both phase and amplitude information to form an image. Every image contains far more echo information than can be derived from a traditional beamformer.

- **Coherent pulse formation** precisely controls both the phase and amplitude of the transmitted waveform, providing high frame rates, increased temporal and spatial resolution, and greater dynamic range and sensitivity.

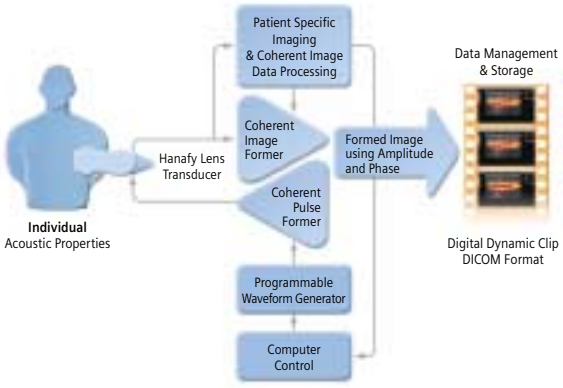
These unique Coherent Imaging Technologies have completely revolutionized the way ultrasound is transmitted, received and processed, delivering:

- **Precision pulse shaping,** for complex transmit waveforms that enable Native™ tissue harmonic Imaging (NTHI) to eliminate or reduce body wall artifacts and acoustic noise.

- **Chirp coded excitation,** for high-frequency imaging of superficial structures in such applications as small parts and musculoskeletal with resolution on the order of 200 microns.

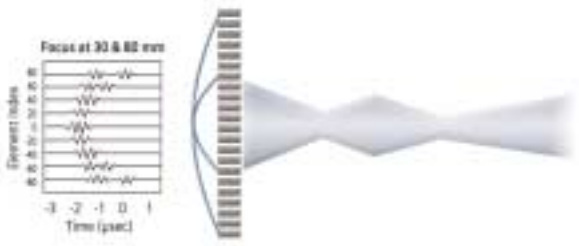
- **Dynamic Transmit Focus,** a single-pulse, multi-focus technique that improves image uniformity throughout the field-of-view while maintaining optimal frame rates.

Sequoia Patient Specific Imaging



Sequoia matched response technology enables programmable control over both transmit phase and amplitude to optimize the image for patient specific acoustic properties.

Dynamic Transmit Focus with a Signal Pulse

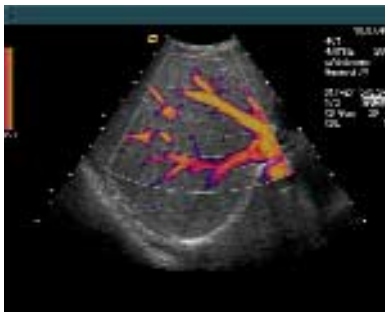


Dynamic transmit focus, a wide bandwidth multi-focus technique, allows a single transmitted beam profile to be simultaneously focused at multiple zones. The result is reduced near-field clutter, minimization of artifacts, and improved image uniformity without compromising frame rate.

Creating a new image

Spatial Compounding

DIMAQ Workstation



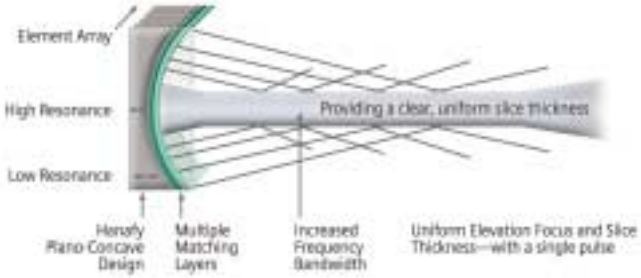
Hanafy Lens Transducer Technology

Innovation

With the Sequoia system, innovation means more than new transducer technology. It means a new way of imaging the patient, with greater depth and detail. New workflow pathways, which offer more without asking for more in return. And a new way of getting to the ultimate answer — with greater image content for more predictable study outcomes:

- **Innovative transducer acoustic response** with patented Hanafy lens acoustic technology that provides continuous focusing and image uniformity while delivering extremely broad bandwidth and precise control of slice thickness — without adding to transducer size, weight or complexity. Because of its unique design, Hanafy lens acoustic technology provides dramatic advantages in both transmit and receive characteristics.
- **Programmable waveform generator,** under computer control, precisely shapes the transmitted echo waveform to optimize and match imaging and Doppler performance from the system to the patient.
- **Proprietary transducer miniaturization** provides advanced ergonomics, lighter weight design and easier handling in small acoustic windows.
- **Bandwidth utilization,** from superior acoustic matching designs and signal fidelity, for increased penetration and resolution, and a dramatically higher level of imaging performance in ultrasound.

Hanafy Lens Transducer Technology



Plano-concave ceramic design and multiple matching layers deliver greater penetration and bandwidth in addition to a more uniform slice thickness.

Programmable Waveform Generator

With Coherent Pulse Formation, the Sequoia system has the unique, patented capability to perform linear addition and amplification of shaped transmit waveforms.

Changing the practice of ultrasound

Performance

The Sequoia system puts Advanced Imaging Technologies to work before the image is formed, for accurate image quality in every application. As a result, the most subtle pathologies become clearer. Anatomical detail becomes more apparent. And physicians can make diagnoses rapidly and with greater confidence, in even the most technically difficult cases.

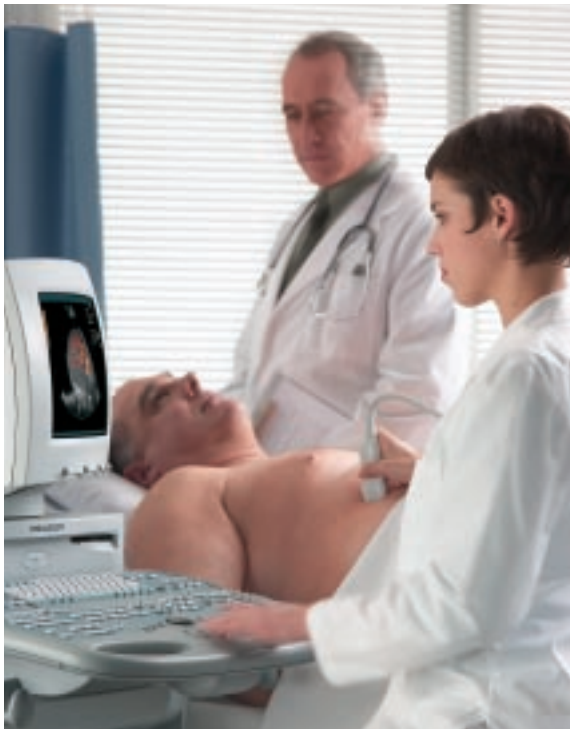
Sequoia system Advanced Imaging Technologies include:

- **TEQ™ ultrasound technology** a sophisticated signal processing technology that utilizes patient specific information to automatically equalize tissue gain and brightness in two dimensions, providing consistent, reproducible image quality in 2D and M-Mode. For spectral Doppler, TEQ technology adapts to individual patient hemodynamics and instantly optimizes PW and CW Doppler information. TEQ technology is a pre-processing method applied to echo data before the image is formed. A touch of a button, affords higher productivity and a dramatic reduction in exam time and inter-operator variability.

- **Cadence™ contrast agent imaging technology*,** an ensemble of technologies that provide new methods for contrast agent detection, including extremely effective bubble preservation algorithms. Unique emission technologies, including Cadence™ contrast pulse sequencing technology, allow clinicians to display the tissue image, the contrast-agent-only image, or both together.

- **Transmit and Spatial Compounding *Plus*** improve contrast resolution, enhance continuity of linear structures and increase conspicuity of specular targets through reduction of image speckle.

- **SST™ color Doppler** produces images with high spatial resolution, high frame rates and unprecedented sensitivity to low flow; and Solo™ spectral Doppler, for superb low flow detection and unprecedented penetration using a dedicated processing path.



Enhanced productivity with a new perspective

Workflow

Sequoia technology allows you to enter the IT domain with all of the information you need in real time. And you can quickly optimize data at any time during the exam. As a result, you can perform the exam with greater efficiency, enhanced diagnostic dependability and convenience.

This is all made possible through the DIMAQ™ integrated ultrasound workstation, with highly customizable acquisition protocols and a powerful, embedded compression engine to instantly capture the complete patient study in digital format.

- **Embedded native DICOM format,** saves data in a secure format that exceeds industry standards, allowing you to control the data from acquisition, to review, to archive. Information can be transferred at any time to the ACUSON KinetDx™ solutions family of products or any DICOM viewer for efficient review, analysis and reporting.

- **Digital Dynamic Clip,** captures real time information in a non-proprietary format and preserves diagnostic integrity in frame-to-frame review.

- **Quantification and Advanced Display Options,** the captured DICOM data set enables Axius™ automatic calculation technology and Advanced Display Options including: 3D, *four*Sight™ TEE view, quantitative strain rate imaging, FreeStyle™ extended imaging and dynamic CDI technologies.

In addition, the **Perspective™ advanced display option** provides the foundation for existing and future applications of extended field-of-view imaging for static and dynamic studies and a wide array of 3-D imaging displays. A new level of workflow efficiency is achieved through the ability to easily review digital dynamic studies, capture and analyze patient data and quickly process patient reports.

Proven Outcomes

We see a way to adapt to patient specific hemodynamics with a single keystroke

We see a way capture digital image quality from acquisition to archival

We see a way to improve contrast resolution 100% of the time

Building on Sequoia matched response technology, the Sequoia system elevates the standard of performance for ultrasound beyond what was once thought possible — and it does so in a way that justifies your trust and strengthens your investment. Small wonder it has been the leading ultrasound platform in the world for seven consecutive years.

Proven Outcomes. This is what Siemens is helping to deliver right now. Outcomes that result from truly efficient workflow. Outcomes that improve your bottom line. Outcomes that lead to a level of care that feels exceptional to the patient and the care provider. Proof positive of the value of integrating medical technology, IT, management consulting and services. In a way that only Siemens can.

* At the time of publication, the U.S. Food and Drug Administration has cleared ultrasound contrast agents only for use in LVO. Check the current regulation for the country in which you are using this system for contrast agent clearance.

ACUSON, Axius, Cadence, DIMAQ, *four*Sight, KinetD_X, MICROSON, Native, Perspective, SST, Sequoia, Solo and TEQ are trademarks of Siemens AG.

Siemens AG Medical Solutions
Henkestraße 127
D-91052 Erlangen
Germany
Tel: +49 9131 84-0

www.siemens.com/ultrasound

Siemens Medical Solutions USA, Inc.
Ultrasound Division Headquarters
P.O. Box 7393
Mountain View, CA 94039-7393 USA
Tel: 1 800-498-7948
From outside the USA: +1 650-969-9112

Siemens Medical Solutions USA, Inc.
Ultrasound Division
P.O. Box 7002
Issaquah, WA 98027-7002 USA
Tel: 1 800-367-3569
From outside the USA: +1 425-557-8704

Europe: +44 20 8479 7950
Asia Pacific: +65 6341 0990
Latin America: +1 786-845-0697

Siemens **Medical Solutions** that help

© 2004 Siemens Medical Solutions USA, Inc.

A91004-M2430-B216-1-4A00
WS 0704 15.0
Printed in USA