



## ACUSON Sequoia Echocardiography Platform

Advancing the practice of echocardiography through workflow and innovation

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

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 Group  
P.O. Box 7002  
Issaquah, WA 98027 USA  
Tel: (1) 800-477-6627  
From outside the USA: (1) 425-557-8704

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[www.siemensultrasound.com](http://www.siemensultrasound.com)  
[www.acuson.com](http://www.acuson.com)

Europe: (44) 20 8479 7950  
Asia Pacific: (65) 6341 0990  
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Ergonomic User Interface



HomeBase Design



Digital Dynamic Review



TEQ™ Control



Advanced Networking



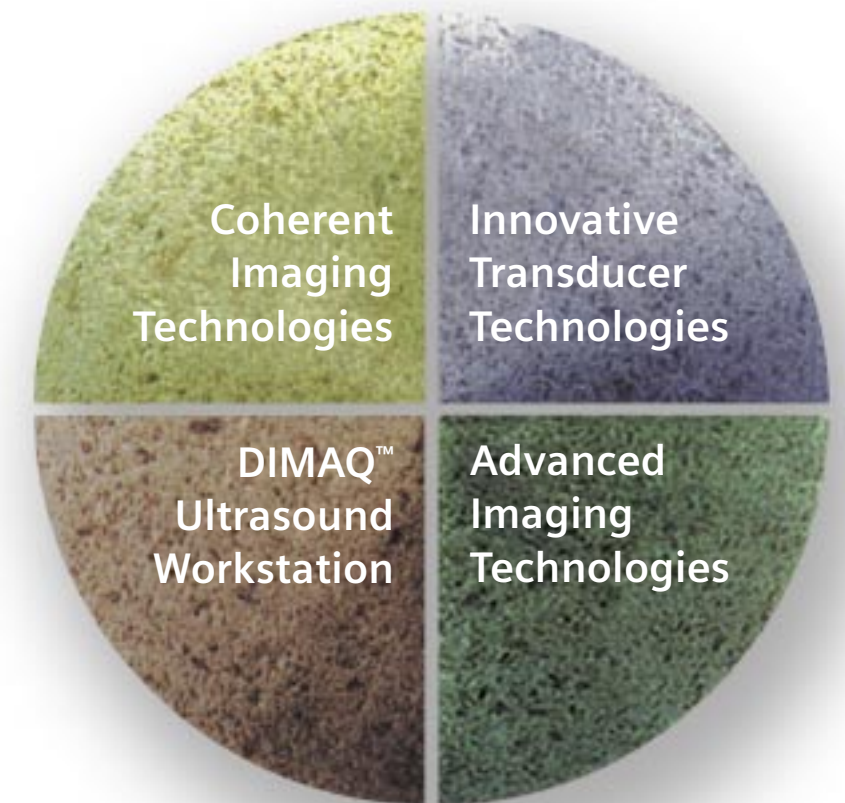


Advancing the practice of echocardiography  
through workflow and innovation

# Performance

No matter how you look at the Acuson Sequoia® Echocardiography Platform, you immediately realize it's in a class of its own. While its award-winning design is certainly distinctive, it is the Acuson Sequoia platform's underlying technology that is truly revolutionary.

Four technology cornerstones are the foundation of the Acuson Sequoia platform's unrivaled clinical performance. They work together to deliver a new level of diagnostic confidence in echocardiography. They streamline workflow and improve productivity. And they enable new clinical capabilities that expand the scope of echocardiography. To understand them is to appreciate just how far the practice of echocardiography has advanced through the Acuson Sequoia platform.



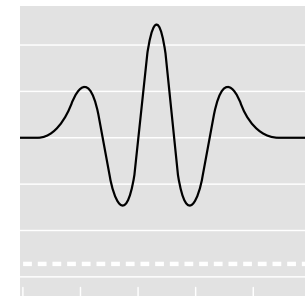
## The physics of accurate echocardiography

Acuson's patented Coherent Imaging Technologies—Coherent Pulse Formation and Coherent Image Formation—represent a revolutionary breakthrough in the way ultrasound signals are transmitted, received and processed. Characterized by a dramatic improvement in dynamic range, spatial resolution and frame rates, coherent images provide an unprecedented amount of new information in every image—for every patient and every application.

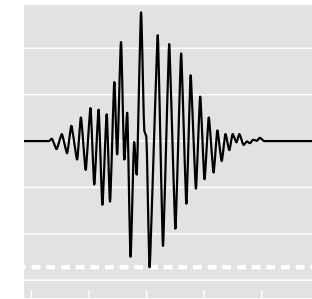
**Coherent Pulse Formation** exploits the Acuson Sequoia platform's sophisticated transmitter to precisely control both the phase and amplitude of the transmitted waveform. Through **Precision Pulse Shaping**, complex waveforms can be generated to optimize imaging performance in many clinical applications.

**Coherent Image Formation** uses the Acuson Sequoia platform's highly sensitive receiver and sophisticated imageformer to process both the phase and amplitude information in the received echo. Every image contains far more echo information than one derived from traditional beamformers.

# V ision



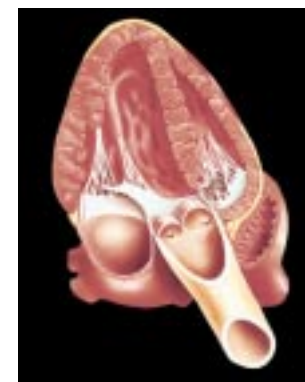
Standard pulse generation.



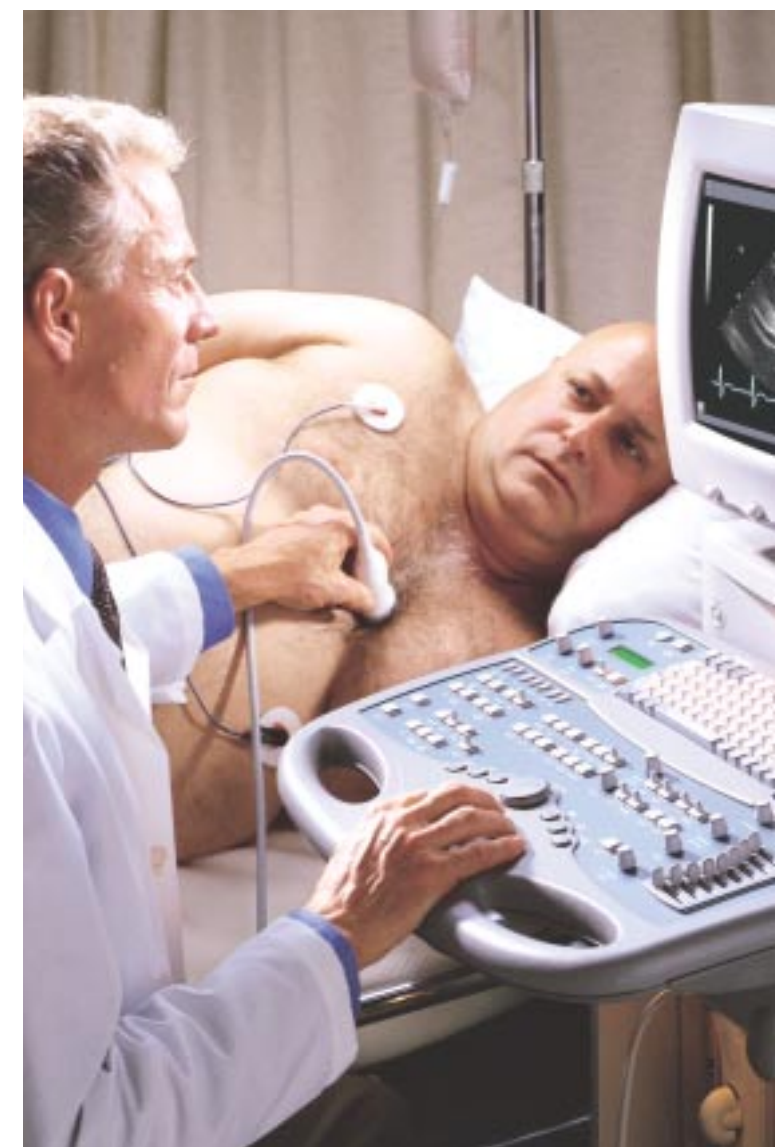
Coherent Pulse Formation provides precise control of the transmitted amplitude and phase.



Traditional ultrasound systems only use amplitude to form the image, and rely on phase merely to steer and focus the beam.



Coherent Image Formation uses both phase and amplitude information to form the complete image.



Acoustic engineering innovation — an Acuson core competency

Developing and producing innovative transducer technologies has always been an Acuson core competency. To tap the full potential of the Acuson Sequoia platform's inherent sensitivity, several new transducer technologies provide a full range of echocardiography solutions.

**MultiHertz® Multiple Frequency Imaging** takes advantage of broad bandwidth piezoelectric materials developed by Acuson, allowing selection of a wide range of transmit and receive frequencies to optimize penetration and resolution.

**microCase™ Transducer Miniaturization Technology** allows a significant reduction in case and cable size, providing access to smaller acoustic windows and improving both operator and patient comfort.

**MICROSON™ High Resolution Imaging** enables high-frequency imaging of superficial structures in such special applications as endothelial function assessment and transgenic mouse heart research. Resolution down to 200 microns is now achievable.



Image Control accesses programmed optimization for every transducer in all applications.



3V2c



7V3c



8L5



8V5



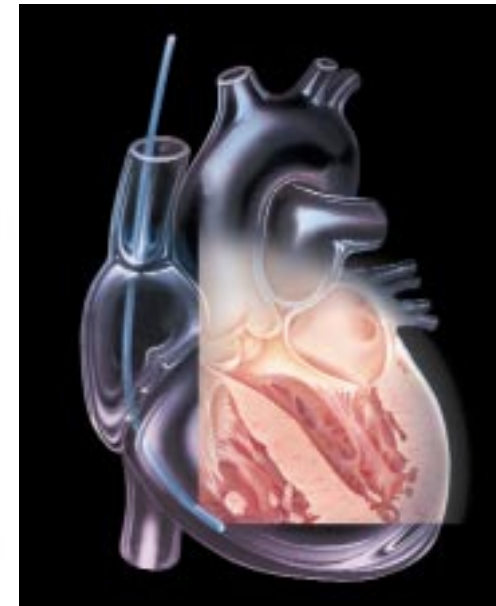
15L8



AcuNav catheter



MP Micro Pinless Transducer Connectors make hundreds of connections without pins to minimize noise and make high-frequency, high-resolution scanning truly viable.



The AcuNav® Diagnostic Ultrasound Catheter brings the full force of ultrasound technology inside the heart, featuring a highly miniaturized phased-array vector transducer on a steerable intracardiac catheter for 2D, spectral and color Doppler applications.

Images acquired using the AcuNav catheter are obtained from the right side of the heart.

Acuson transducers are the most ergonomic available, providing easy imaging access for all patients across a wide range of applications.



V5M

## Delivering a new level of productivity and workflow efficiency

The DIMAQ workstation is a special purpose workstation that is completely embedded into the Acuson Sequoia platform's inherent architecture. At its core are a highly programmable acquisition protocol and a powerful Integrated Compression Engine that digitally capture the complete patient study—including demographics, static images, dynamic clips, measurements and calculations. Each study is stored in the DICOM file format as it is acquired, so all patient data can be instantly accessed, reviewed and analyzed directly on the system— even during the patient exam. The DIMAQ workstation has direct access to all exam data and offers real-time image processing. It also provides:

- Staged protocols for complicated exams, such as contrast agent imaging and stress echo
- A full suite of DICOM capabilities
- Advanced calculations
- On-board digital image and data management



Rapid acquisition and review during the patient exam.



Highly programmable image capture and staged protocols.



DIMAQ functionality is easily accessed through the HomeBase Design.



Complete digital studies can be quickly and easily accessed on the DIMAQ workstation for review, analysis and reporting, directly on the echocardiography system or at a remote viewing station, such as the KinetDx® workstation.

# Workflow



The DIMAQ workstation empowers special applications such as the highly flexible Stress Echo Package, standard on the Acuson Sequoia platform.

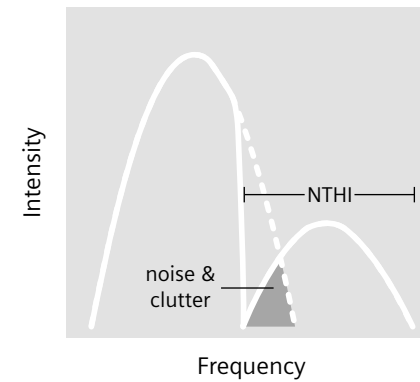
## Innovative echocardiography

The Acuson Sequoia platform offers several Advanced Imaging Technologies that optimize image quality and improve image information for every patient study. Physicians can make diagnoses faster and with more confidence—even in studies previously considered technically difficult. Most importantly, new **Single Pulse Cancellation** enables these advanced technologies to be utilized simultaneously while preserving high frame rates. This is achieved by transmitting a single, precisely shaped pulse along each line of sight rather than transmitting multiple pulses along each line.

**Native® Tissue Harmonic Imaging (NTHI)** is a patented method of harmonic imaging available only on Acuson systems. NTHI detects subtle harmonic echoes generated within the body while rejecting unwanted echoes which produce artifacts in traditional ultrasound imaging. By producing consistent high-quality images for all patient types, NTHI has become the default imaging mode for most users.

≡ **TEQ™ Technology** is a revolutionary RF signal pre-processing technology that instantly differentiates tissue echoes from blood, noise and other specular reflectors. At the touch of a button, Tissue Equalization Technology automatically equalizes tissue gain and brightness in two dimensions. This technology reduces exam time, enhances workflow and allows more time to focus on the patient, especially in demanding situations such as stress echo, TEE and contrast studies.

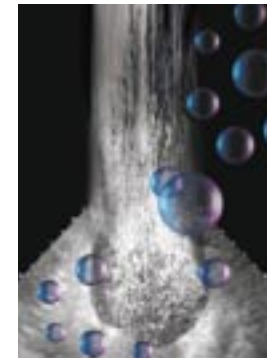
# Technology



With other forms of harmonic imaging, noise and clutter from the fundamental interfere with the weaker harmonic signal. Only NTHI uses Coherent Pulse Formation for precise control of the frequency band. Tissue harmonic echoes are readily distinguished from noise and clutter.



TEQ™ Technology produces consistent, high-quality exams with far less time spent adjusting controls.



**Cadence™ Contrast Agent Imaging** expands the standard contrast harmonic imaging capabilities on the Acuson Sequoia platform. The success of Cadence contrast imaging is attributable to innovations in Coherent Pulse Formation, Tissue Equalization Technology and the digital dynamic clips enabled by the DIMAQ workstation. It provides superior contrast agent detection sensitivity for emerging applications such as Myocardial Contrast Echocardiography.

### Highly Sensitive Doppler

The Acuson Sequoia system continues Acuson's tradition of pioneering Doppler technology. These innovations provide a more sensitive and accurate display of flow—even in hard-to-image conditions. They also have proven effective in expanding clinical

applications, such as diastolic function assessment by pulmonary vein sampling and detection of coronary artery flow.

- SST™ Color Doppler
- Solo™ Spectral Doppler
- Convergent™ Color Doppler
- DTI™ Doppler Tissue Imaging

**DELTA® Differential Echo Amplification** is a unique pre-processing technique that optimizes contrast resolution without sacrificing detail resolution. It helps to visualize the endocardial outline in technically difficult studies as well as very small structures and anomalies—even when surrounded by tissue with similar acoustic properties.

For nearly two decades, Acuson has applied a unique philosophy to the practice of echocardiography. This way of thinking has led to an unsurpassed history of technology breakthroughs. It also explains why our platforms have always set the gold standard for imaging performance and upgradeability.

Total investment protection is the basis of this philosophy. The principal goal is to ensure that every system delivered meets your clinical needs, now and in the future. This is why the Acuson Sequoia platform was designed from the beginning with a long-term upgrade strategy. Its flexible core architecture anticipates future performance improvements, which will increase system capability and expand clinical utility.

The Acuson Sequoia platform also takes digital connectivity to an entirely new level. No other platform provides for such efficient, cost-effective transfer of patient exams.

Our commitment to the future, to advancing the practice of echocardiography, explains why our platforms have proven to be the best long-term investment in ultrasound. That's the Value of Vision. And as a Siemens Company, that vision forms part of a comprehensive, integrated medical solution that's enhancing the quality of patient care worldwide.



Gold standard in echocardiography



Connectivity solutions



TEQ™ Technology:  
Simplified system operation



Vision inside the heart

# ACUSON

# Sequoia

