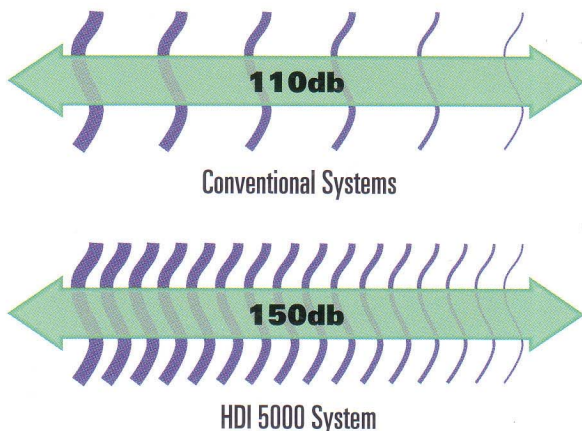


Breakthrough in digital ultrasound technology and performance

The supercomputed beamforming of the HDI 5000 system is a significant step in the evolution of our proven, all-digital technology. This dramatic computing power provides a quantum leap in both the amount of diagnostic information acquired and the ability to process it.

An exponential increase in dynamic range. Dynamic range is a critical factor in ultrasound. It is the total span of signals upon which image and flow data are based, from the strongest to the weakest. The HDI 5000 system has an exponentially expanded dynamic range that dramatically impacts all modes, including harmonic imaging.



Extreme processing power. With its super-computing IPU (Image Processing Unit) the HDI 5000 system achieves extraordinary processing power. The system completes more complex ultrasound functions faster, resulting in a higher level of imaging and color Doppler performance.

These technological advances are pivotal to the HDI 5000 system's ability to provide diagnostic information and system intelligence capabilities never before accessible.

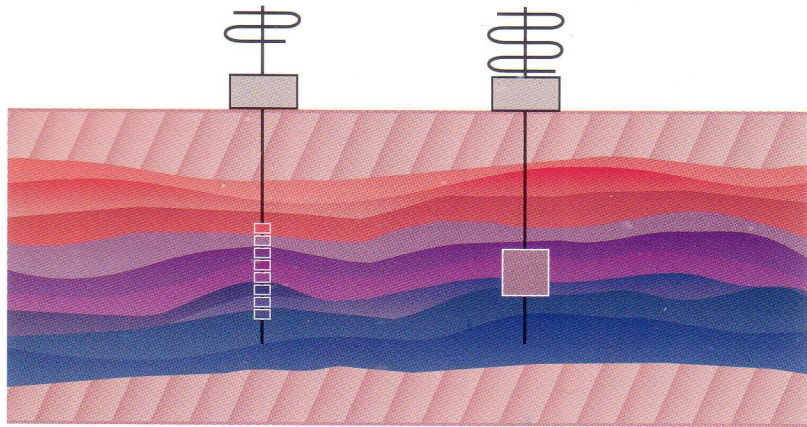
MicroFine™ Grayscale Imaging—exceptional clarity and detail. The broadband digital architecture, supercomputing IPU and extraordinary dynamic range of the HDI 5000 system produce MicroFine grayscale imaging with dramatically reduced dot size for extremely fine detail resolution. Ultra-precise spatial focusing and advanced textural processing allow visualization of minute variances in tissue texture and subtle interfaces, increasing the quantity and quality of diagnostic information. MicroFine imaging provides improved tissue uniformity to better differentiate pathology from healthy tissue, and increased zoom resolution makes taking a closer look more informative than ever.

Digital Broadband Flow™
Imaging—color resolution that rivals grayscale. True broadband information, the foundation of High Definition Imaging, has now been applied to depiction of flow. ATL has broken the barriers of conventional narrowband Doppler processing, resulting in color Doppler imaging with detail and clarity never before possible.

A fundamental benefit of broadband processing is smaller sample points. And ATL's patented broadband approach processes multiple points simultaneously, instead of using the mean velocity for a single sample as in narrowband techniques.

New levels of sensitivity of low velocity blood flow and weak signals from deep within the body are made possible by the system's extreme dynamic range. Intelligent algorithms

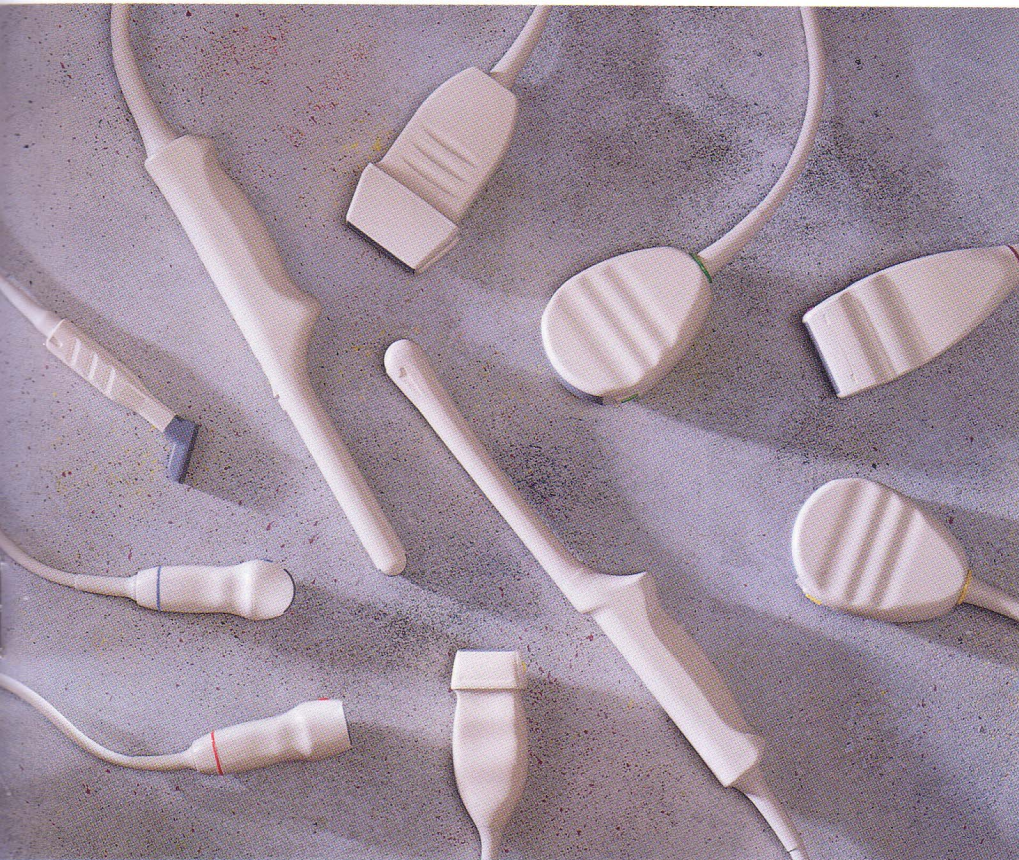
Broadband Short Pulse Narrowband Long Pulse



Broadband Flow technology on the HDI 5000 system yields smaller sample points processed simultaneously, providing a more detailed profile of hemodynamic subtleties.

actively differentiate between flow signals and tissue movement, virtually eliminating motion artifacts, and a new definition control feature allows users to enhance flow profiles or select smoother flow portrayals.

High-performance scanheads. Virtually all HDI broadband scanheads are compatible with the HDI 5000 system, taking full advantage of its significant increase in image formation and processing power.



Taking ultrasound to a higher level

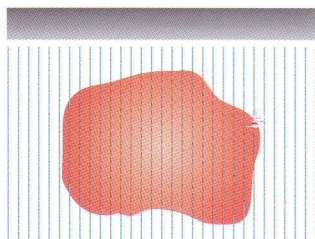
The HDI 5000 system's quantum leap in processing power enables an unprecedented amount of clinical data to be acquired and visualized in real time. Borders and margins are better defined. Low flow states are more easily identified. Costly and invasive follow-up procedures can be avoided.

New, Intelligent Tissue Specific™ Imaging.

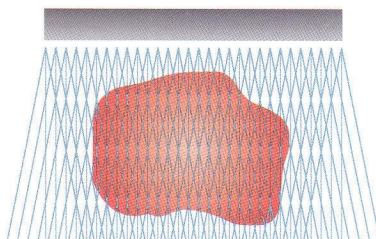
In addition to optimizing thousands of parameters throughout the entire system before a particular exam and fine tuning for patient type, Intelligent TSI on the HDI 5000 system actually "learns" during the examination, constantly adapting to variations in returning signals. This reduces variability of exam quality from user to user and frees the clinician to concentrate on patients and diagnoses.

Advanced capabilities for advanced utility. The HDI 5000 system is also ready to perform an entire suite of advanced clinical capabilities:

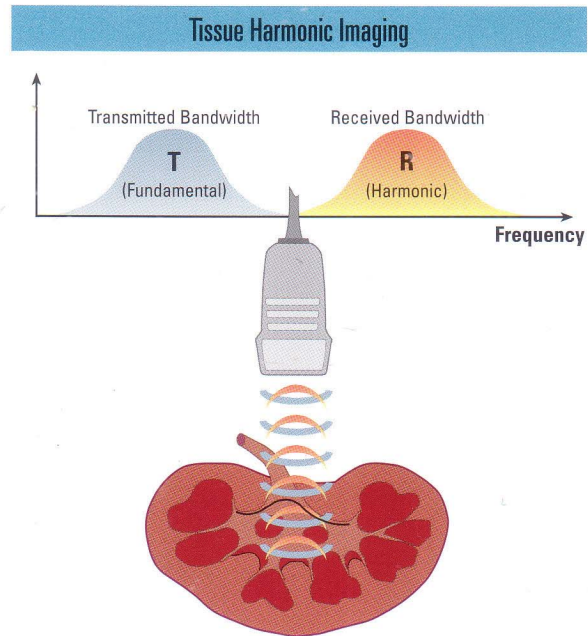
- **New SonoCT Real-time Compound Imaging.** In SonoCT mode, the HDI 5000 system views the targeted area from up to nine different angles, then combines the resulting images into a single compound image at real-time frame rates. This suppresses the inherent artifacts found in conventional ultrasound and reinforces real structures to display an image that is a more realistic representation of tissue and fluid. Significant advances in computational power on the HDI 5000 system, along with proprietary new signal-processing architecture



Conventional ultrasound
(single line of sight)



SonoCT Real-time Compound Imaging
(multiple lines of sight)



The fundamental ultrasound signal is transmitted at a broad band of low frequencies. The signal resonates off tissue in the body at twice the transmitted frequency. Because the higher frequency signal travels one way from the tissue to the scanhead it is not attenuated by round-trip travel through tissue. And, since the signals do not include fundamental frequencies, they are virtually free of artifactual data.

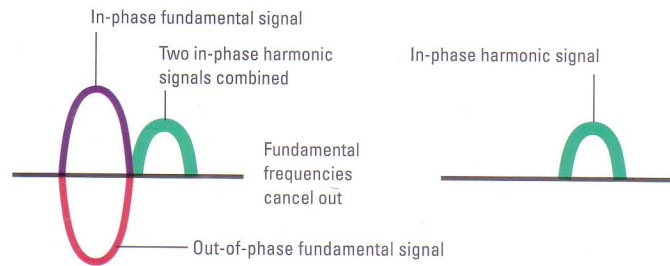
bring real-time compound imaging to diagnostic ultrasound—another first for ATL. SonoCT Real-time Compound Imaging permits more definitive and confident identification of tissues in breast, musculoskeletal and small parts studies, enhances delineation of vessel walls and pathology in vascular examinations, and improves needle visualization for biopsies and interventional procedures.

- **Third-generation Tissue Harmonic Imaging.** When ATL first unveiled Tissue Harmonic Imaging (THI), it was the most exciting development in ultrasound in years. Using advanced digital algorithms to precisely control the HDI 5000 system's beamforming and signal processing, THI enables a dramatic reduction in image artifacts, reduces haze and clutter, and significantly increases contrast resolution. It has demonstrated considerable improvements in grayscale imaging, especially on those patients considered technically difficult, and provides a new level

of patient-independent performance that can salvage examinations initially deemed undiagnostic. Now, ATL's latest advances in THI technology allow the use of broader bandwidths to obtain pure harmonic signals with greatly enhanced contrast and detail resolution. In addition, users can select harmonic image-processing options at the touch of one button.

- **Contrast and Harmonic Contrast Imaging.** HDI technology is at the forefront of the exciting field of contrast imaging. Contrast Specific Imaging exploits the flexibility and broad bandwidth capabilities of the HDI 5000 system to provide optimum use of echo-enhancing agents, as they become available. The system also provides complete harmonic imaging capability.
- **Pulse Inversion Harmonics.** This exciting processing method significantly improves the visualization of contrast agents. ATL's patented Pulse Inversion Harmonics uses real-time digital signal storage and phase cancellation techniques to create a pure harmonic signal, and clinicians and researchers are seeing things

Pulse Inversion Harmonics



In-phase and out-of-phase fundamental signals are sent into the body, returned and digitally stored in the HDI 5000 system. The system mathematically sums the two fundamental signals, which cancel each other out. The harmonic signals combine to produce a pure harmonic signal.

they've never seen before. Pulse Inversion Harmonics allows visualization of minute amounts of contrast agent with very high spatial resolution.

- **Digital 3DI® capability.** Integrated, digital 3D images in grayscale and Color Power Angio® modes provide clinicians with new perspectives on anatomical spatial relationships. In addition, the HDI 5000 system can export data sets to an Advanced 3DI® system, where an automatic display quickly sets up the 3D image in the most useful configuration for each application. Clinicians then have the ability to interrogate the 3D-image data set and view any arbitrary slice of interest with multi-planar reformatting.
- **Intraoperative imaging.** The HDI 5000 system now supports the Entos® line of intraoperative scanheads, adding to the system's versatility by including the proven imaging benefits of HDI broadband technology in open and laparoscopic procedures, as well as vascular surgery.

