SIEMENS

HELX
Evolution
Release

# Tissue Strain Analysis with Ultrasound

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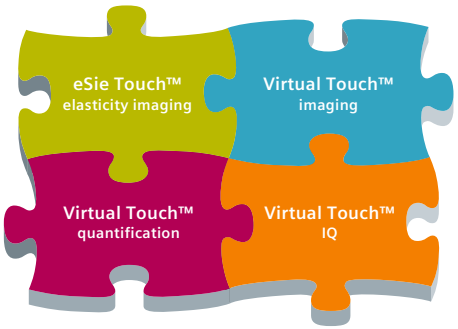
Answers for life.

# A New Dimension of Diagnostic Information




**Siemens Tissue Strain Analysis Suite**

Siemens was the first to bring ARFI-based technology to the market. This ground-breaking technology provides fast and easy assessment of relative tissue stiffness in an easily performed and highly reproducible way and can be complementary to compression elastography.

Palpation has long been used to assess the changes in tissue stiffness associated with disease, but is limited. Siemens' comprehensive suite of Tissue Strain applications provides a new dimension of diagnostic information through either qualitative assessment or quantitative measurement of the mechanical stiffness of tissue.

This complete suite of strain features provides an elastography solution for all clinical needs.

All versions can be integrated into eSieScan™ Workflow Protocols as well as exported to PACS for complete patient records.

## Technology Availability

*(Specific transducers and system software required)*

| | ACUSON S1000 | ACUSON S2000 | ACUSON S3000 |
|---|---|---|---|
| eSie Touch imaging | ● | ● | ● |
| Virtual Touch Imaging (VTi) | | ● | ● |
| Virtual Touch Quantification (VTq) | | ● | ● |
| Virtual Touch IQ (VTIQ) | | ● | ● |

## Technology Milestones

**2007**
eSie Touch elasticity imaging

**2008**
VTi and VTq for Abdomen (excluding the USA)

**2010**
VTi and VTq for Small Parts (excluding the USA)

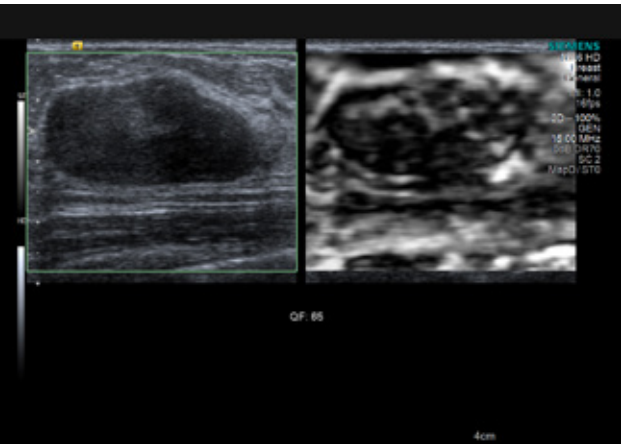
**2012**
VTIQ for Small Parts (excluding the USA)

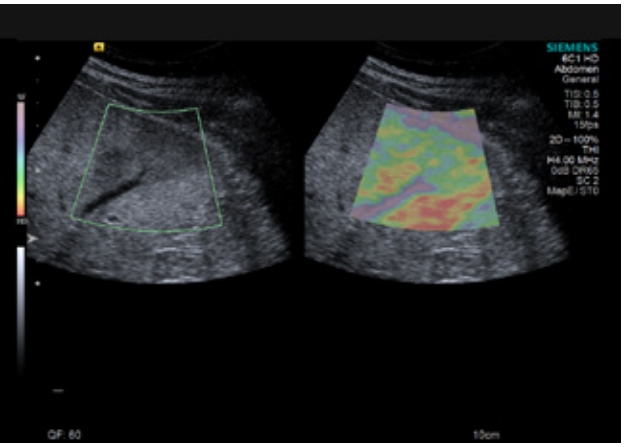
**2013**
FDA clearance for VTi, VTq and VTIQ

**future**

# eSie Touch
# Elasticity Imaging

Fibroadenoma

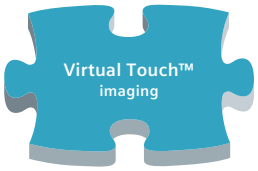



Focal fatty sparing


eSie Touch elasticity imaging, available on the ACUSON S Family™ of ultrasound systems as well as the ACUSON Antares™ ultrasound system, provides immediate assessment of relative tissue stiffness. It is available on multiple transducers and for multiple exam types including abdominal and small parts allowing maximum flexibility and asset utilization. The exceptional system sensitivity permits patient respiration and/or vascularity to provide compression, thus reducing user variability common with some versions of this technology. A complete set of tools, including Strain Ratio, maximizes clinical utility.

# Virtual Touch Imaging



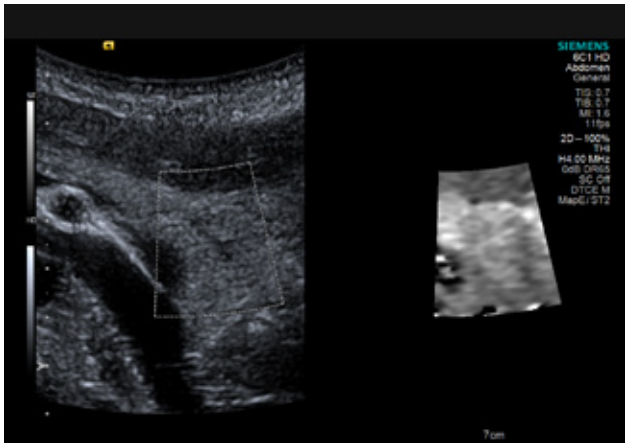

Virtual Touch™ imaging (VTi), available on the ACUSON S2000™ and ACUSON S3000™ ultrasound systems, provides a qualitative grayscale or color map (elastogram) of relative stiffness for a user-defined region of interest. Using this method, stiff tissue may be differentiated from soft tissue even when it appears isoechoic using conventional ultrasound imaging.

In addition, the enhanced border definition provided by Virtual Touch imaging allows for improved measurement accuracy while the ability to identify the stiffest portion of a lesion (which is often the area with the most pathological change) can enhance FNA and biopsy sampling accuracy.

Exam flexibility is assured through use in both abdominal as well as small parts imaging.

The integration into standard exams and standard transducers coupled with its fast acquisition time (15 seconds from the identification of the lesion) provide further workflow benefits.

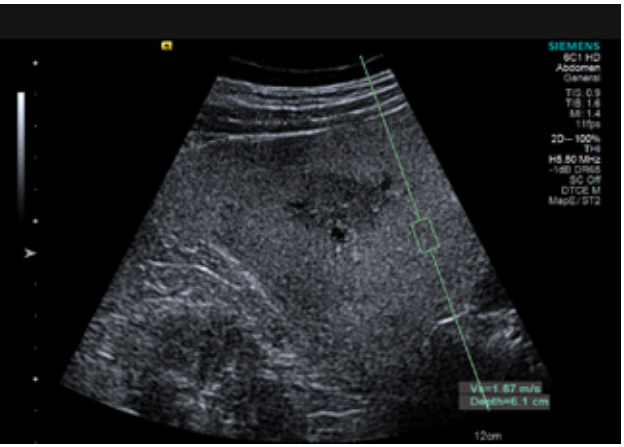
Liver hemangioma

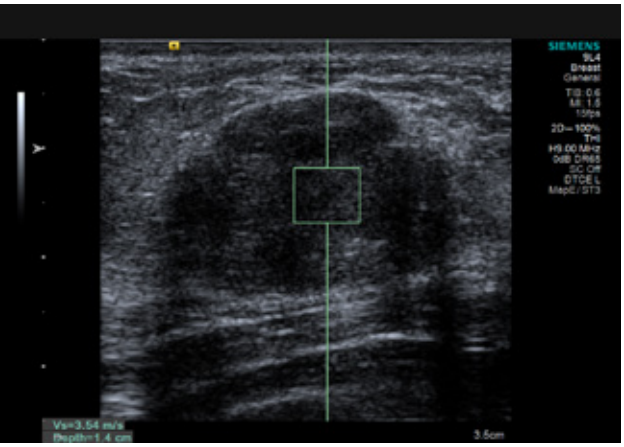


Lesion in tail of pancreas

# Virtual Touch Quantification

Liver stiffness assessment





Sampling of solid thyroid mass

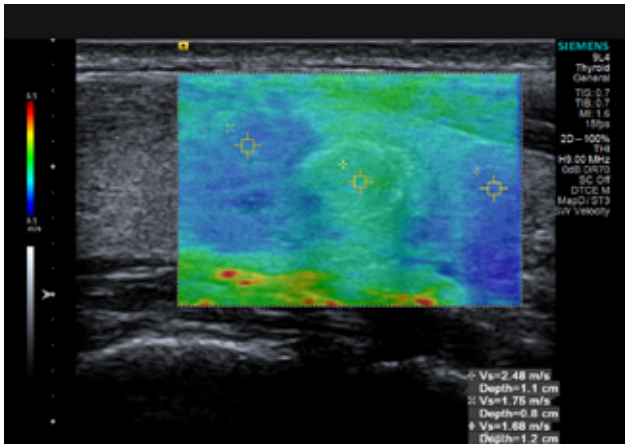

Virtual Touch™ quantification (VTq), available on the ACUSON S2000™ and ACUSON S3000™ ultrasound systems, provides a quantitative value for shear wave velocity at a user-defined region of interest. As tissue stiffness is correlated with shear wave velocity, an assessment of tissue stiffness may be obtained. Assessment may be made in the abdomen, particularly the liver, as well as in small parts such as breast and thyroid and can assess both general tissue stiffness as well as that of lesions. A comprehensive reporting package including more advanced statistical analysis tools provides data recording for even the most advanced user.

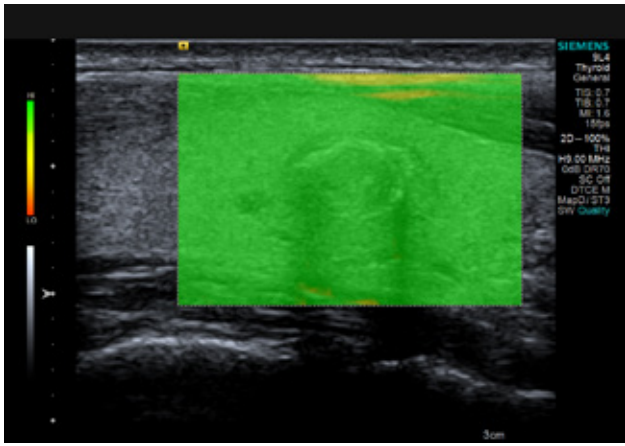
# Virtual Touch IQ


Virtual Touch™ IQ is available on the ACUSON S3000™ ultrasound system, and is now also available on the ACUSON S2000™ ultrasound system, HELX™ Evolution Release. VTIQ provides an image-based assessment using a color-coded scale for shear wave velocity. Additionally, pinpoint quantitative measurements of areas of concern may be acquired, all within a user-defined region of interest and at exceptional resolution. This makes the technology well-suited to small parts, especially breast and thyroid focal lesions, while the use of the 9L4 transducer provides imaging potential to visualize even the most difficult patients. Reporting packages are integrated with the technology, and allow a seamless workflow in clinical practice.

VTIQ offers several unique features to aid in interpreting the elastogram. The Quality Map indicates the quality and reliability of the shear wave measurements through an intuitive "traffic light" display. Areas where the shear waves are absent, for example, are shown as black rather than being assigned a possibly erroneous color.

High resolution of a thyroid mass. Areas with no/poor quality shear waves are shown as black




Same lesion as above, showing unique Quality Map with intuitive "traffic light" display

Standalone clinical images may have been cropped to better visualize pathology.

The products/features mentioned in this document may not be commercially available in all countries. Due to regulatory reasons their future availability cannot be guaranteed. Please contact your local Siemens organization for further details.



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