



Data sheet

ACUSON NX2 Elite ultrasound system

Release 1.1

siemens-healthineers.com/ultrasound



Table of Contents

General Information 6

System Architecture	6
User Interface	6
Control Panel	7
System	7
Monitor	7

Transducer Technology 8

Transducer Ports	8
Transducer Storage	8
Hard Drive	8
Physiological Interface	8

Operating Modes 8

2D	8
Color Doppler	8
Spectral Doppler	8
M-mode	8

Display Modes 9

2D-mode Image Processing	9
MultiHertz Multiple Frequency Imaging	9
Tissue Harmonic Imaging (THI)	9
Focusing	9
2D Image Display	9
2D Calipers – Generic Measurements and Calculations	10
Color Doppler Velocity Imaging	10
Power Doppler Imaging/Directional Power Doppler	10
Color and Power Doppler Display	10

Pulsed Wave Spectral Doppler	10
Steerable Continuous Wave (SCW) Doppler	11
Spectral Doppler Display	11
Spectral Doppler Calipers – Generic Measurements and Calculations	11
M-mode	11
M-mode Image Display	11
M-mode Calipers – Generic Measurements and Calculations	11
QuickSet User-programmable System Parameters	11

Freeze, Cine and Cine Post-Processing Functions **12**

Cine Review	12
Post-Processing Features in Freeze Frame or Cine	12

Study Types **12**

Exam-specific Measurements and Reports **12**

Abdomen	12
Obstetrics	13
Gynecology	13
Cardiac	13
Cerebrovascular	13
Peripheral Vascular	13
Venous	13
Thyroid	13
Urology	13
Orthopedic	13
TCD	13
Emergency Medicine	13

Digital Patient Study Storage and Archiving 14

Patient Study Management	14
--------------------------	----

Advanced Technologies and Features 14

Dynamic TCE Technology	14
Tissue Grayscale Optimization (TGO)	14
SieClear Compounding	14
Advanced SieClear Spatial Compounding	15
HD Zoom (Option)	15
DICOM 3.0 Connectivity (Option)	15
DICOM Modality Worklist (Option)	15
DICOM MPPS – Modality Performed Procedure Step (Option)	15
QuikStart (Option)	15
Spectral and Color Doppler Tissue Imaging (DTI)	15
Clarify Vascular Enhancement (VE) Technology (Option)	15
SieScape Panoramic Imaging (Option)	15
3D/4D (Option)	16
Physio (Option)	16
<i>syngo</i> Auto OB Measurements (Option)	16
<i>syngo</i> Arterial Health Package (AHP) (Option)	16
<i>syngo</i> Auto Left Heart (Auto LH) Technology (Option)	16
Stress Echo Imaging (Option)	17
eSie Touch Elasticity Imaging (Option)	17
Barcode Reader (Option)	17
DICOM Structured Reporting (Option)	17
DICOM Connectivity (Option)	18
Regional Imaging Presets	18
Ultrasound System Security – Virus Protection	18

Documentation Devices 18

Optional On-Board Video Devices	18
---------------------------------	----

System Input/Output 18

Video and Audio Input/Output (I/O)	18
Acoustic Output Management	18
Dual Foot Switch (Option)	18

Image Storage and Archiving 18

USB Ports	18
Image Network Export	18
Modality Performed Procedure Step (MPPS)	18

System Dimensions 18

Electrical/Environmental Specifications 19

Integrating the Healthcare Enterprise (IHE) 19

Standards Compliance 19

Quality Standards	19
Design Standards	19
Acoustic Output Standards	19
Radio and Telecommunications Standards	19

EU Authorized Representative 19

ACUSON NX2 Elite ultrasound system

The ACUSON NX2 Elite ultrasound system is the next generation performance cart-based system in the Siemens Healthineers ACUSON product line. As part of the award-winning¹ ACUSON NX Series, the new lightweight and compact ACUSON NX2 Elite platform uses enhanced image processing architecture to deliver superb image quality on the largest monitor in its class, as well as workflow efficiencies using Siemens Healthineers' new tactile UI.

With a broad range of applications to reliably perform day-to-day clinical procedures, the ACUSON NX2 Elite is the system of choice for essential shared service, general imaging and OB/GYN requirements in hospitals and clinics.

General Information

System Architecture

All-digital signal processing and multi-beam formation technology provide best-in-class imaging in all modes and enable seamless integration of features and options to:

- Enable parallel Quad beam processing of the RF signal data in the time and amplitude domains with new generation all digital beamformer technology
 - 2D-mode line density: Up to 512 lines
 - Processing channels: Up to 172,032 channels
 - Total system dynamic range: > 266 dB
- Dynamic TCE tissue contrast enhancement technology, SieScape panoramic imaging, Advanced SieClear spatial compounding, SieClear compounding and Clarify vascular enhancement (VE) technology are built into the ACUSON NX2 Elite system to provide excellent image quality
- Enhance productivity through application-specific imaging presets, TGO tissue grayscale optimization technology Doppler auto optimization, enhanced measurement and report functionality, knowledge-based workflow tools including syngo® Auto OB measurements, QuikStart rapid boot and standardized imaging protocols
- Streamline connectivity with solutions such as DICOM Print/Store, DICOM Modality Worklist, DICOM MPPS and DICOM structured reporting for OB/GYN, Vascular and Cardiac exams
- Increase functionality with *fourSight* 4D ultrasound imaging technology and integrated stress echo

User Interface

- On-screen text, control panel overlay and operating instructions are available in the following languages:
 - English, French, Italian, German, Spanish, Chinese
- Russian keyboard and operating instructions supported

¹ ACUSON NX3 Ultrasound System won the Red Dot Award: Product Design 2016.



- Operating instructions are available in 23 additional languages
- Thumbnail menu provides on-screen thumbnail images and dynamic clips during exams
- On-screen acoustic power indicator (AIUM/NEMA output display standard)

Control Panel

- Simple, intuitive user interface with Home Base design minimizes repetitive hand motions and enables motor-memory learning
- **Backlit key illumination**
- Variable key brightness indicates active functions
- Task light
- Customizable soft keys for easy and immediate viewing of on-screen menus
- **Full-size QWERTY keyboard supports text entry, function keys and system programming**
- Wrist support to help reduce operator fatigue

System

- Control panel
- Articulating monitor arm to help improve ergonomics
 - FPD rotation: -80° to +80°
 - Tilt: -15° to 80°
 - Pull: 160 mm
- Integrated high performance audio speakers
- Wheels
 - Castor size: 125 mm
 - Front castor (2 ea): Total lock
 - Rear castor (2 ea): Total lock

Monitor

- **Flat Panel Display (LED), 21.5-inch widescreen, color, high resolution, and progressive scan (non-interlaced) with In Plane Switching (IPS) technology**
- **Resolution: 1920 × 1080 pixels**
- Recordable image area clips: 800 × 600 pixels
- Monitor tilt: 15° up, 80° down and swivel of ±80°
- Digital on-screen display of brightness control and task light
- Energy saving display power management
- Angle of view: 178°

Transducer Technology

Ultra-sensitive, wideband transducers, matched with user-selectable MultiHertz multiple frequency imaging, improve resolution and penetration. Up to seven 2D and THI frequencies and up to two color Doppler and spectral Doppler frequencies expand the clinical versatility of a single transducer, thereby maximizing transducer investment.

- Innovative ultra low-loss lens materials and micro-electronic technologies for efficient performance and increased signal bandwidth
- Independent 2D and color frequencies for optimal resolution and penetration
- **Frequency range: 1–20 MHz**
- Hanafy lens acoustic technology
- Universal, stainless steel and disposable biopsy guides for specified linear and curved array transducers

Note: Please refer to the dedicated transducer flyer on our website at siemens.com/ultrasound for more information.

Transducer Ports

- **4 standard transducer ports** that support high density phased array, curved array and linear array transducers
- Electronic transducer selection (instantaneous switching between transducers)
- Supports DL (260) type connectors
- Industrial design provides easy access to the transducer ports
- Aux CW port for 2 MHz and 5 MHz CW transducers

Transducer Storage

- 5 standard configurable transducer holders support all transducer designs and provide gel bottle storage
- Special transducer holder provides secure storage and easy access to endocavity transducer
- Transducer holders can be removed for cleaning

Hard Drive

- Internal 500 GB hard drive
- Allows storage of patient studies that include images, clips, reports and measurements
- Image storage capacity up to 300,000 images with compression
- For more detailed information, please consult the Digital Patient Study Storage and Archiving section on page 14

Physiological Interface

- Standard 3-lead ECG interface
- Auxiliary Input for ECG and other physiology signals from third party devices
- Continuous display in all real-time modes
- R-Wave single and dual trigger function
- Respiratory trace
- Heart rate display
- Adjustable gain and trace position on-screen
- Recovery time: Less than 2 seconds

Operating Modes

2D

- Fundamental 2D
- Phased THI
- Filtered THI
- Alternating THI

Color Doppler

- Velocity-based color Doppler
- Power Doppler
- Directional power Doppler
- Color M-mode
- Color Doppler tissue imaging

Spectral Doppler

- Pulsed wave
- Steerable continuous wave (SCW)
- Duplex and Triplex modes

M-mode

- Color M-mode
- Anatomical M-mode (option)
- ECG trace in all modes

Display Modes

- **Selectable split screen** display formats in 2D or 2D/color with M-mode and/or spectral Doppler mode: top-bottom or side-by-side in real-time and digital cine replay
- 4B-mode allowing simultaneous display of 4 static B-mode images
- Virtual Format
- Dual from freeze
- Split/Zoom

Flexible combination of imaging modes in side-by-side Dual and Dual Select in real-time, and digital cine replay.

2D-mode Image Processing

- All-digital parallel signal processing with frame rate up to 1,157 fps (transducer dependent)
- MultiHertz imaging: Up to 7 user-selectable transmit frequencies
- Res/Speed selection: 6 levels
- Persistence: 5 levels
- Edge enhancement: 4 levels
- Dynamic range selection: 30–90 dB in 3 or 5 dB increments, application dependent
- Gain: -20 to +20 dB in 1 dB increments
- DTO Dynamic Tissue Optimization technology: 4 levels
- Dynamic TCE technology: 4 levels
- Depth/Gain compensation: 8 controls
- User-selectable gain balance: 9 maps
- User-selectable 2D colorization: 16 maps
- **Maximum display depth: 30 cm**
- Minimum display depth: 1 cm

MultiHertz Multiple Frequency Imaging

Siemens Healthineers' unique MultiHertz multiple frequency imaging is designed to combine the resolution and penetration of several transducers into one. At the push of a button, the user can independently change frequencies for 2D, THI, color and spectral Doppler to select the optimal combination for image resolution, penetration and sensitivity.

- Transmit frequencies: Up to 3 user-selectable frequencies
 - 2D and M-mode: Up to 3 fundamental frequencies
 - THI: Up to 5 frequencies
 - Color, power, or pulse wave Doppler modes: Up to 3 frequencies
 - SCW Doppler mode: 1 frequency

Tissue Harmonic Imaging (THI)

Selectable harmonic frequencies increase success with difficult-to-image patients, improving diagnostic confidence, and dramatically improving contrast and spatial resolution by reducing noise and clutter in the image.

- MultiHertz imaging capability in THI
- Available on the CH5-2, EC9-4, P4-2, C8F3, VF10-5, C5-2v, L10-5v, CW2, CW5, 10MC3

Focusing

- Transmit focal zones: Up to 8 zones
- Digital dynamic receive focusing with dynamic apodization
- Multi-position, user-selectable position
- Can use multiple focal zones simultaneously

2D Image Display

- Full screen, Split, Quad and Dual Select screen formats as well as Dual, Dual seamless, Dual select and Dual from Freeze
- Curved Vector format
- L/R flip and U/D flip for all formats in real-time and digital cine replay
- Split/Zoom
- Image depth: 1–30 cm in 1.0 cm increments (transducer dependent)
- Virtual Format Imaging (transducer dependent)
 - Left/right steer
 - Trapezoid Imaging
- Digital read/write Zoom with image pan
 - Available on live and cine replay images
 - At least 2.5× and up to 10× zoom (transducer dependent)
- 4B-mode
- 90° image rotation (all linear transducers)

2D Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen, live, dual screen and cine playback images
- Distance measurements: Up to 8 measurements per screen
 - Distance measurement
 - Depth measurement from skin line
 - Angle measurement
 - Area and circumference: ellipse, trace
- Compound Measurements
 - Volume: user-selectable preset by 1 distance, 2 distance, 3 distance, or 1 ellipse and 1 distance
 - Flow volume: 1 velocity and 1 distance, or 1 velocity and 1 ellipse
 - Stenosis: user-selectable preset calculated by 2 ellipse, or 2 distance measurements

Color Doppler Velocity Imaging

- Available on all imaging array transducers
- Multi-beam formation technology provides quad signal processing for color Doppler frame rates up to 188 fps (transducer dependent)
- Transmit frequencies: Up to 3 user-selectable frequencies per transducer
- Left/right steer on all linear transducers
- Color Doppler invert
- Advanced processing in color Doppler mode resulting in excellent spatial resolution and superior Flash suppression
- AutoColor flow state optimization with high, medium and low flow settings
- Color Doppler velocity maps: Up to 9 user selectable maps (7 velocity and 2 velocity/variance)
- Velocity scale range: ± 0.6 to ± 244.4 cm/sec
- PRF scale range: 100–19,500 Hz (transducer dependent)
- Gain: -20–20 dB in 1 dB increments
- Color Doppler line density: 6 selections
- Wall filter: 4 selections
- Color smoothing: 4 levels
- Tissue/color priority: 5 selections
- Color Doppler persistence: 5 levels
- Velocity tag
- Peak hold: Off, 1 sec, 2 sec and 3 sec
- DTI Doppler tissue imaging capability available on the P4-2 transducers

Power Doppler Imaging/Directional Power Doppler

- Available on all imaging array transducers
- Multi-beam formation technology provides quad signal processing for power Doppler frame rates up to 195 fps (transducer dependent)
- Left/right steer on all linear array transducers
- Transmit frequencies: Up to 3 user-selectable frequencies per transducer
- Power Doppler maps: Up to 16 maps (8 directional and 8 non-directional)
- PRF scale range: 100–19,500 Hz (transducer dependent)
- Gain: -20–20 dB in 1 dB increments
- Power Doppler line density: 6 selections
- Wall filter: 4 selections
- Power Doppler smoothing: 4 levels
- Tissue/power Doppler priority: 5 selections
- Color persistence: 5 levels

Color and Power Doppler Display

- 2D/C mode, Split 2D-2D/C mode
- Dual real-time 2D/C mode
- 2D/C/D mode (simultaneous triplex), 2D/C/D mode (update)

Pulsed Wave Spectral Doppler

- Available on all imaging array transducers
- Transmit frequencies: Up to 3 user-selectable frequencies per transducer
- Sweep speed: 8 selections
- DTI capability available on select transducers
- Post-processing gray maps: 8 maps
- Doppler colorization maps: 12 user-selectable maps
- Gain: 0–80 dB in 1 dB increments
- PRF range: 100–19,500 Hz
- Velocity scale range: ± 1.5 to ± 350 cm/sec with 0° angle correction
- Angle correction: 0–89° in 1° increments
- Gate size: 1.0–20 mm
- Wall filter: 25–3,906 Hz, 8 steps (transducer dependent)
- Baseline shift: 17 levels
- Spectral invert
- Autotrace function

Steerable Continuous Wave (SCW) Doppler

- Available on all phased array transducers
- Transmit frequency: 1 frequency
- Sweep speed: 8 selections
- Post-processing gray maps: 8 maps
- Doppler colorization: 12 maps
- Gain: 0–80 dB in 1 dB increments
- PRF range: 1.56–34.7 kHz sample rate
- Velocity scale range: ± 30 to ± 650 cm/sec with 0° angle correction
- Wall filter: 25–6,944 Hz, 8 steps
- Baseline shift: 17 levels
- Spectral invert
- Autotrace function is not supported in SCW mode

Spectral Doppler Display

- Full screen Doppler trace, 2D/Doppler mode, triplex or update 2D/C/Doppler
- Imaging display: 4 formats
 - Top-bottom: 1/3–2/3, 1/2–1/2, 2/3–1/3
 - Side-by-side

Spectral Doppler Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen and cine playback images
- Velocity/Frequency/Pressure Gradient
- Heart rate/Heart cycle/Time
- Autotrace measurements in real time and freeze including calculations for PS, ED, TAMx, TAMn, PI, RI and S/D
- Resistive Index (RI)
- Pulsatility Index (PI), including Peak-to-Peak method
- Time Average Velocity max (TAV)
- Systolic/diastolic ratio (S/D)
- Velocity Time Integral (VTI)
- Acceleration/Deceleration
- Flow volume using combined velocity and distance, or velocity and ellipse measurements
- Doppler angle correction after measurement

M-mode

- Available on all imaging array transducers
- Anatomical M-mode (option) – live and cineloop
 - Allows for acquisition of anatomically accurate M-mode by allowing angle correction. Provides off-axis alignment for M-mode measurements.
- Frequencies: Up to 5 user-selectable frequencies, including fundamental and harmonics
- Edge enhancement: 4 selections
- Display dynamic range (transducer dependent): 30–90 dB in 5 dB increments (in case of P4-2, 39–90 dB)
- Gain: -20 to +20 dB in 1 dB increments
- Gray maps: 9 maps
- M-mode colorization maps: 16 maps
- Sweep speed: 8 selections

M-mode Image Display

- Full screen M-mode, 2D/M-mode
- Imaging display: 4 formats
 - Top-bottom: 1/3–2/3, 1/2–1/2, 2/3–1/3
 - Side-by-side

M-mode Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen and cine playback images
 - Distance
 - Time
 - Slope
 - Heart rate

QuickSet User-programmable System Parameters

All imaging modes and parameters are customizable and programmable using QuickSet user-programmable system parameters.

- Up to 128 QuickSet parameters supported
- QuickSet parameters combine all preferred imaging mode parameters, annotation, text and measurements into a single user preset

Freeze, Cine and Cine Post-Processing Functions

Cine Review

The cine feature is standard and offers the ability to review real-time acquired data. All real-time, post-acquisition optimization functions are available in cine review.

- Frame-by-frame cineloop review and continuous cine motion review, including control of playback rate
- Independent cine review in mixed modes (2D/M, 2D/Doppler, 2D/C/Doppler)
- Independent cine review in 2D Dual Select mode with image align playback feature
- Standard cine memory: Up to 2,729 frames and clip capture up to 120 seconds
- Acoustic clip capture from cine review
- Anatomical M-mode optional

Post-Processing Features in Freeze Frame or Cine

- 2D-mode
 - Zoom/pan
 - Gray map
 - Colorization map
 - Measurements/reports/annotations/pictograms
- Color Doppler
 - Zoom/pan
 - Color map
 - Color invert
 - Measurements/reports/annotations/pictograms
- Spectral Doppler
 - Gray map
 - Doppler colorization map
 - Angle correct
 - Measurements/reports/annotations/pictograms
- M-mode
 - Gray map
 - M-mode colorization map
 - Measurements/reports/annotations/pictograms

Study Types

The ACUSON NX2 Elite system is designed to support many multi-specialty imaging applications. Factory-supplied exam and transducer dependent imaging presets have been carefully optimized for each application to provide consistency, reliability and increased productivity. All applications include body markers, text and annotation labels. Selected applications support customized worksheets and reports. The following study types are supported:

- Abdominal
- Renal
- Obstetrics
- Gynecology
- Early Obstetrics
- Adult Cardiac (Transthoracic)
- Vascular (C-Vas, P-Vas, Venous)
- Small Parts (Breast, Testicle, Thyroid)
- Orthopedics
- Musculoskeletal (MSK)
- Urology
- Cranial (TCI & TCD)
- Emergency Medicine (EM)
- Fetal Echo
- Pelvic Floor

Exam-specific Measurements and Reports

All measurement and report packages are available for use with all exam types.

All exam-specific measurement and reports support:

- All general measurements and calculations
- Comprehensive, customizable, patient reports and worksheets
- Customizable anatomy descriptions
- Physician summary utility – supports on-system report generation including customizable letterhead, patient data, results, graphs, images, comments, recommendations and a customizable signature line

The following Measurements and Reports packages are available on the ACUSON NX2 Elite ultrasound system:

Abdomen

- All general measurements and calculations

Obstetrics

- Early Obstetrics Gestational Age (GA) measurements are MSD, CRL, and Yolk Sac
- Gestational Age parameter labels are MSD, CRL, BPD, OFD, HC, AC, ATD, ASD, FL, HL, UL, TL, FT, FTA and BN
- 10 user-defined measurement labels
- Calculations include: EFW from the selected reference, HC/AC, TCD/AC, LVW/HW, CorBPD, FL/AC, FL/BPD, CI, AFI, AXT
- Comprehensive Fetal Heart measurements and calculations
- Facial Angle
 - Nuchal Translucency and Nuchal Fold measurements
- Calculations for both Gestational Age (GA) and Estimated Date of Confinement (EDC)
- Early OB and Standard OB patient reports include worksheets for viewing the progress of the report and editing during the exam process
- Multiple fetus reporting capabilities
 - Maximum of 4
- Growth Analysis Graphs with exam file linking
- Detailed Fetal Heart report page

Gynecology

- Micturated and residual volume calculation
- Uterus, Right and Left Ovary, Right and Left Follicle, CRL, MSD, GS and Yolk Sac measurements
- Follicle measurement supports up to 15 follicles
- Follicle measurement methods supported
 - MDistance
 - 2Dist + Avg
 - 3Dist + Avg
 - 2Dist Avg
 - 3Dist Avg
 - Area
 - Volume
 - Circumference

Cardiac

- Adult standard measurements
- Volume formulas for Left Ventricular function assessment in 2D-mode and M-mode
- 2D-mode, M-mode and Doppler calculations
- M-mode Slope, Heart Rate, Time and Distance measurements
- Spectral Doppler Acceleration, Trace, Heart Rate, Time and Velocity measurements
- Cardiac patient report and worksheet for 2D-mode, M-mode and spectral Doppler

Cerebrovascular

- CCA prox, CCA mid, CCA dist, ICA prox, ICA mid, ICA dist, ECA and VA measurements
- Area Percent Stenosis and Diameter Percent Stenosis measurements

Peripheral Vascular

- CIA, EIA, CFA, PFA, SFA prox, SFA mid, SFA dist, P OP A, TRUNK ATA, PTA, PER A and DPA measurements
- Right and left extremity measurements

Venous

- Right and left extremity measurements

Thyroid

- Rt. Lobe, Lt. Lobe Isthmus and nodule measurements
- Supports measurement of up to 15 separate nodules
- Measurements can display all 3 measurements plus volume calculation

Urology

- Pre- and post-void volume, Prostate volume, PSAD and micturated volume calculations
- Includes both Prostate and Urology report packages

Orthopedic

- Right and left hip angle measurement
- Classification and Graf Sonometer
- Hip angle patient report

TCD

- RMCA, ICA-Siphon, ACA-A1, ACA-A2, ACoA, PCAP1, PCA-P2, PCoA, PCA, Basilar A and Vert A measurement

Emergency Medicine

- FAST – Focused Assessment with Sonography for Trauma reporting
- Aorta – Essential aorta measurements and reporting to support emergency medicine
- OB – Subset of essential OB measurements and reporting

The ACUSON NX2 Elite system supports customizable labeled measurements (25 B-mode, 25 Doppler and 5 M-mode) for the following exam types: Abdomen, Musculoskeletal, Breast, Testicle, Venous, Renal, Superficial Musculoskeletal, and Small Parts. All reporting packages support user-defined descriptors (up to 39).

Digital Patient Study Storage and Archiving

The **DIMAQ-IP integrated workstation** allows for digital acquisition, storage and review of complete ultrasound studies, including static images, dynamic clips, measurements, calculations and reports.

Studies can be reviewed and quantified on-board, stored on the system hard drive and transferred to the built-in DVD multi-drive (DVD-R/RW & CD-R/RW) or USB Flash drive for cost-effective archival.

Patient Study Management

Playback of digitally stored images in a selectable 1-up, 4-up, 9-up, 16-up or 25-up screen format. The patient study screen allows search, selection and deleting of studies or export to DVD multi-drive (DVD-R/RW and CD-R/RW).

- 300 GB of the 500 GB internal hard drive reserved for patient data management
 - Patient database sorting by Name, ID and Study Date
- Hard drive capacity:
 - Approximately 300,000 B/W and color images
- Storage and retrieval of static images
- Storage and retrieval of cine clips
 - Retrospective clip capture during real-time imaging with a selectable duration of 1, 2, or 4 seconds or a selectable duration of 1, 2, 3 or 4 beat capture; ECG-triggerable
 - Prospective clip capture during real-time imaging with a selectable duration of 1 to 120 seconds or a selectable duration of 1 to 120 beat capture; ECG-triggerable
- Export of patient studies from hard drive
- Storage and retrieval of reports
- Supports measurements and calculations on archived study and on saved and retrieved images
- Acoustic clip capture from cine review
- M-mode still frame scroll and store
- PW spectral Doppler still frame scroll and store
- Export of patient studies from hard drive to DVD-R/RW and CD-R/RW drive. Studies can be individually selected or batched copied
- The system supports the following data export file formats RTF, PDF, TIFF, AVI, JPG and DICOM. Connectivity to PACS, other off-line storage (such as USB flash drive) or EMR device is achieved via LAN or WLAN connection.

- Compatible with removable 650 MB, 700 MB and 790 MB CD-R and 650 MB or 700 MB CD-RW
- Removable 4.7 GB single layer DVD and 8.5 GB single side double layer DVD
- Supports export to USB Flash Drive

Advanced Technologies and Features

Dynamic TCE Technology

- Dynamic TCE technology is a proprietary, advanced post-processing method for speckle reduction
- Compatible with other advanced imaging modes including Advanced SieClear compounding, THI and TGO technology
- Supports all primary and secondary exam types
- Three levels available: Low, Medium and High

Tissue Grayscale Optimization (TGO)

TGO tissue grayscale optimization technology provides one-button image optimization. It automatically adjusts image brightness to the tissue type being imaged and equalizes the overall image gain. It also automatically adjusts baseline and scale in doppler. The user-definable threshold accommodates different user preferences for gain settings and various room lighting conditions. TGO technology improves the consistency and quality of the ultrasound images to enhance productivity by removing time-consuming and operator-dependent manual adjustments. TGO technology can be used with every transducer, for every exam type and at every imaging frequency, including THI.

SieClear Compounding

The SieClear compounding option uses multiple lines of sight to increase contrast resolution and improve tissue differentiation of low contrast lesions by reducing image speckle. Tissue boundaries and interfaces appear sharper and more continuous. SieClear compounding is accessible in THI and is compatible with other advanced imaging options including SieScape imaging, TGO technology and Clarify vascular enhancement technology.

Advanced SieClear Spatial Compounding

This feature combines two distinct technologies to create exceptional image quality: Advanced SieClear spatial compounding and SieClear compounding. This combination of technologies provides exceptional improvements in border definition.

- Up to 7 steering angles available on linear transducer, 5 available on curved array transducers
- Supports all primary and secondary exam types

HD Zoom (Option)

High density (HD) zoom function obtains a region of interest with increased detail resolution.

- Ability to enlarge areas of interest with no loss of detail
- Increased boundary resolution of cystic regions, vessels and hypoechoic regions

DICOM 3.0 Connectivity (Option)

Enables digital data transfer via a DICOM network for both printing and storage. The ACUSON NX2 Elite system acts as a DICOM Storage Class User and DICOM Print Class User.

- Connectivity to PACS system for storage of all digital images and dynamic clips with patient demographic data
- In-progress store during the exam
- Image printing to DICOM color and grayscale printers
- DICOM storage commitment
- DICOM exchange media export to DVD-R/RW and CD-R/RW
- DICOM region calibration
- DICOM interchange media viewer software ShowCase®
- Interchange media database that identifies the CD to which the patient study has been burned

DICOM Modality Worklist (Option)

Enables query and direct download of the patient worklist schedule from the Hospital/Radiology Information System (HIS/RIS) to the ACUSON NX2 Elite system, automatically populating the "New Patient" screen with patient demographic information.

DICOM MPPS – Modality Performed Procedure Step (Option)

Enables automatic exchange of Modality Performed Procedure Step information with the Hospital/Radiology Information System (HIS/RIS).

QuikStart (Option)

QuikStart reduces time required for power-up and power-down events by allowing the system to enter a specialized standby mode.

- Standby mode power-down in 4 sec; complete boot-up in less than 10 sec
- Standby time: > 35 min
- Full recharge: < 180 min

Spectral and Color Doppler Tissue Imaging (DTI)

- Supports both color DTI and spectral DTI functionality and includes a quantification package
- Enables assessment of LV diastolic function on the ACUSON NX2 Elite system
 - Spectral Doppler DTI capability utilizes real-time Doppler shift information from moving tissue to better visualize and quantify myocardial diastolic function
 - The spectral Doppler DTI calculation package provides guided velocity and acceleration measurements and includes a measurement report package
 - Color DTI capability can be used for qualitative evaluation of wall motion and displays the relative change of velocities
 - Color DTI M-mode
 - DTE (Doppler Tissue Energy)

Clarify Vascular Enhancement (VE) Technology (Option)

Clarify VE technology is a real-time, adaptive, pixel-by-pixel analysis implemented through a simple, time-saving user interface that provides multiple levels of clarification to optimize tissue contrast resolution and definition of both tissue and vessel walls according to user preference. Clarify VE technology is available on all curved and linear transducers.

SieScape Panoramic Imaging (Option)

Grayscale panoramic imaging allows acquisition and display of images up to 60 cm in length to a maximum curvature of 360°.

- Available on all curved and linear transducers
- Can be displayed in full field acquisition or zoomed for detail viewing
- Measurements available

3D/4D (Option)

- **3-Scape real-time 3D imaging**
 - Provides a freehand acquisition technique
 - Supported on the CH5-2, EC9-4, and C8F3 transducers
- **fourSight 4D ultrasound imaging technology (option)**
 - Provides real-time 3D images
 - Utilizes mechanical acquisition
 - Up to 19.3 vol/sec
 - Supported on the C8F3 4D transducer
 - Offers an easy-to-use interface for rapid acquisition and volume rendering Curved Top VOI
 - 4D cine
 - MPR Measurements
- **Advanced fourSight Technology (option)**
 - Offers enhanced 3D/4D acquisition, data rendering and post-processing functionality
 - MultiSlice format allows the user to select range, slice spacing and format for viewing each slice. The MultiSlice format supports up to 36 slices at once.
 - Thick Slice Imaging (TSI) enables definition of a view plane and creates a thick slice around the region of interest. TSI delivers improved contrast resolution and provides more information in a single image.
 - Curved MPR enables real-time multiplanar reformatting of images into any linear or curved plane. This permits the user to set points along a curved object in order to bring all objects along this line into the same plane for viewing, such as the fetal spine

Physio (Option)

Contains the prerequisites to perform cardiac and certain vascular exams:

- **Physiological interface**
 - Standard 3-lead ECG interface
 - Aux ECG interface
 - R-Wave single and dual trigger function
 - Heart rate display
 - Adjustable gain and trace position on screen
 - Selection for external ECG input
 - Respiratory function
- Provides the ability to configure ECG capabilities for specialty applications that do not require Continuous Wave Doppler capabilities
- AUX ECG and Respiratory functions are supported in addition to conventional Physio Module

syngo Auto OB Measurements (Option)

The syngo Auto OB measurements option contains an innovative algorithm which provides the ability to automatically measure the most common fetal structures required for fetal biometry: BPD, HC, AC, FL and HL. This technology reduces user variance, providing consistency between operators and reduces keystrokes. All measurement results are saved to the OB report.

syngo Arterial Health Package (AHP) (Option)

syngo Arterial Health Package provides the clinician with the capability to measure Carotid Intima-Media Thickness (CIMT) and the option to reference normative tables that have been validated and published in peer-reviewed studies.¹ The information is intended to provide a straightforward tool for communicating with patients the relative state of their cardiovascular system.

This feature should be utilized according to the ASE Consensus Statement, "Use of Carotid Ultrasound to Identify Subclinical Vascular Disease and Evaluate Cardiovascular Disease Risk: A Consensus Statement from the American Association of Echocardiography; Carotid Intima-Media Thickness Task Force, Endorsed by the Society for Vascular Medicine."

syngo Auto Left Heart (Auto LH) Technology (Option)

- **Calculated confidence**
 - Uses pattern recognition technology based on a comprehensive database representing typical adult transthoracic exams
 - Provides robust performance and expert-like consistency in every exam
 - Excels in technically difficult studies as learning is largely independent of image quality
- **Automated Workflow**
 - Bypasses the cumbersome "mark-and-trace" method to calculate EF, end diastole volume and end systole volume
 - Automatically identifies ED and ES frames and tracks endocardial borders frame to frame
 - Promotes smooth, efficient workflow with manual edit options
 - Reduces observer variability to yield more consistent, standardized measurements

¹ ARIC- G Howard, et al: "Carotid artery intimal-media thickness distribution in general populations as evaluated by B-mode ultrasound, ARIC Investigation". Stroke 1993;24;1297-1304.

- Consistent, reliable and convenient
 - Extends calculation accuracy to broaden clinical confidence
 - Presents EF measurement in complete perspective with image frames for ED and ES with numerical and graphical data
 - Available off the system with *syngo* US Workplace
 - Operates on DICOM clips from select Siemens Healthineers and non-Siemens Healthineers ultrasound systems

Stress Echo Imaging (Option)

The stress echo package provides tools for ECG-triggered acquisition, display, selection comparison, evaluation and archiving of multiple cardiac loops during various stages of a stress echo examination.

- Standard acquisition protocols for treadmill, ergometric and pharmacological stress including:
 - Multiple factory default stress echo protocols
 - Customizable stress echo protocols
 - Flexible combination of imaging modes while in stress echo package
 - Ability for customized studies through Protocol Editor, with up to 12 stages, 6 views per stage, 20 loops per view or 120 sec prospective clip capture
 - Full screen or ROI (region of interest) acquisition
- Complete R-R capture with clip editing
- Easy workflow throughout the exam protocol
- Stage Timer
- Prospective continuous capture (up to 120 seconds) or Retrospective labeled capture
- Reference image display during acquisition
- Immediate review of acquired loops
- Flexibility to skip views or stages
- Flexibility to re-acquire and overwrite already acquired images
- Indication of current view, acquired views and skipped views in the workflow diagram
- Wall Motion Scoring, 16/17 segment model with graphical display and report printing
- LV Volume Measurements with report printing

eSie Touch Elasticity Imaging (Option)

eSie Touch elasticity imaging is a real-time quantitative imaging method that calculates and displays the relative stiffness of the tissue.

eSieTouch elasticity imaging allows the user to generate the elastogram by applying gentle sequential compression cycles during standard B-mode imaging. This relative displacement of tissue is displayed as an elastogram in a live dual image display of the grayscale or color image with the standard B-mode image.

- Unique mapping options in grayscale and color further enhance the ease of interpreting an elastogram
- Area, Distance and Strain ratio measurement capability allow for quantitative comparison of two images
- A quality factor indication provides feedback on the quality of acquisition and allows more acute selection of most appropriate frame(s) for assessment or measurement
- For this release, eSie Touch imaging is available on the L10-5v transducer

Barcode Reader (Option)

- Allows fast and accurate patient information data input
- Easy attachment to USB port
- Supports 2D and 1D patient barcodes
- Can scan up to 3 individual barcodes: patient, physician and sonographer
- Inputs the following patient-identifying data:
 - Patient Name (First and Last)
 - Patient ID
 - Physician ID
 - Sonographer

DICOM Structured Reporting (Option)

DICOM Structured Reporting (SR) provides a standardized report architecture to allow for easy transfer of measurements to offline PCs, workstations and archiving systems. DICOM Structured Reporting will automatically populate measurements to their respective fields in an external software package. This option is available for the following applications:

- OB/GYN
- Vascular
- Cardiac

DICOM Connectivity (Option)

Utilizes USB dongle to enable wireless connectivity between the ultrasound system and the facility's LAN to provide functionality equivalent to a wired network.

The Wireless Option supports connectivity with:

- DICOM services – Modality worklist, print, storage commitment and store
- Siemens Healthineers Remote Service – Remote update handling for storage distribution and NetViewer for remote application support and remote troubleshooting

Technical Specification

- Standards: IEEE 802.11 a/b/g/n/ac
- Security features: WEP, WPA, WPA2 personal, WPA and WPA2 Enterprise

Regional Imaging Presets

A configurable image setting customized for each particular region as defined by regional user feedback. Imaging presets include: Standard (factory default), Americas, Europe, Asia, and MEA (Middle East and Africa).

Ultrasound System Security – Virus Protection

Embedded virus protection solution that protects the system against advanced persistent threats, viruses, malware and other executing software by detecting and preventing any unwanted change to improve IT compliance and security.

Documentation Devices

Optional On-Board Video Devices

- Up to 2 documentation devices (B/W printer and color printer/DVR recorder) can be integrated into the system cart and controlled from the system control panel
- Supported devices:
 - Mitsubishi USB P95DW B/W Printer
 - Sony UP-D711 B/W Printer
 - Mitsubishi USB CP30DW Color Printer
 - Sony UP-D25MD Color Printer
 - TEAC DVR UR-50BDS

System Input/Output

Video and Audio Input/Output (I/O)

- VGA out and DVI out
- External audio out
- S-Video

Acoustic Output Management

- On-screen acoustic power indicator (AIUM/NEMA output display standard)

Dual Foot Switch (Option)

- USB type dual-control, programmable foot switch

Image Storage and Archiving

USB Ports

- Two USB 2.0 ports in the front, four USB ports in the back panel and supports export to USB flash drive

Image Network Export

- Provides network export (TCP/IP) for images and clips

Modality Performed Procedure Step (MPPS)

As the SCU for the Modality Performed Procedure Step SOP class, the system automatically updates systems involved in the echocardiography workflow (CIS, PACS) about the status of the study.

System Dimensions

- Height: 143.1 cm (56.3 in)
- Width: 53.2 cm (20.9 in)
- Depth: 86.2 cm (33.9 in)
- Weight: 62 kg (137 lbs) without OEM's

Electrical/Environmental Specifications

The ACUSON NX2 Elite system is available in one mainframe configuration, suitable for use in 100/120 V and 230 V environments.

- Power connections: 100–120 / 200–240 VAC, 50/60 Hz
- Power consumption: maximum 600 VA with OEM's
- Atmospheric pressure range: 700–1060 hPa
- (525–795 mm Hg) or up to 3000 m (9,483 ft)
- Ambient temperature range (without OEM's): 10–40 °C (50–104 °F)
- Humidity: 30–80%, non-condensing, during operation
- Maximum heat output: 2150 BTU/hr
- Average noise level output: 39 dB

Integrating the Healthcare Enterprise (IHE)

Having all relevant information at one's fingertips is a prerequisite for optimal and efficient patient care. Seamless integration of the hospital's IT and Imaging Systems and their capabilities to exchange information without restriction are key success factors for facilitating daily work. This is why Siemens Healthineers has been instrumental in launching and advancing the IHE (Integrating the Healthcare Enterprise) Initiative. The ACUSON NX2 Elite ultrasound system is just one of many innovative Siemens Healthineers products embedded with the necessary building blocks to support clinicians' need for seamless health information exchange.

For more information on the ACUSON NX2 Elite system and the Siemens Healthineers commitment to the IHE initiative, please visit siemens-healthineers.com/IHE.

Standards Compliance

The ACUSON NX2 Elite ultrasound system is in compliance with the following standards, including all applicable amendments at the time of product release.

Quality Standards

- FDA QSR 21 CFR Part 820
- ISO 9001
- ISO 13485

Design Standards

- UL 60601-1
- CSA C22.2 No. 601.1
- EN 60601-1 and IEC 60601-1
- EN 60601-1-2 and IEC 60601-1-2
- EN 60601-2-18 and IEC 60601-2-18
- EN 60601-2-37 and IEC 60601-2-37
- EN 60601-1-6 and IEC 60601-1-6
- EN 62304 and IEC 62304
- EN 62366 and IEC 62366

Acoustic Output Standards

- IEC 62359 ed. 2 (Test Methods for the Determination of TI and MI)
- AIUM/NEMA UD-2, Acoustic Output Measurement Standard for Diagnostic Ultrasound
- AIUM/NEMA UD-3, Standard for Real-time Display of Thermal and Mechanical Acoustic Output Indices on Diagnostic Ultrasound Equipment
- EN 62359 (test methods for the determination of thermal and mechanical indices, 2011) and IEC 62359 (2010)

Radio and Telecommunications Standards

- CFR 47 FCC Part 15.247
- CFR 47 FCC Part 15.107
- CFR 47 FCC Part 15.109
- ETSI EN 300 328
- ETSI EN 301 893
- ETSI EN 301 489-1
- ETSI EN 301 489-17

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At Siemens Healthineers, our purpose is to enable healthcare providers to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

An estimated 5 million patients globally everyday benefit from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics and molecular medicine, as well as digital health and enterprise services.

We are a leading medical technology company with over 170 years of experience and 18,000 patents globally. With more than 48,000 dedicated colleagues in 75 countries, we will continue to innovate and shape the future of healthcare.

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 Healthineers organization for further details.

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