SPECIFICȚIE TEHNICĂ COMPLETATĂ

Modelul: VIVID IQ R6 US PREMIUM/ Vivid iq v206; PN: H48942BG; Producător: GE Healthcare si GE MEDICAL SYSTEMS (CHINA) CO., LTD.; Țara: China

Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină ofertantă de către autoritatea ofertantă
Ultrasonograf cardiovascular performanţă înaltă (EXPERT), portabil cu troliu Tip laptop sau analogic;	**DA** Ultrasonograf cardiovascular performanţă înaltă (EXPERT), portabil cu troliu. **pag. 1 din Vivid iq Premium Data Sheet** **DA** Tip laptop sau analogic; **pag. 1 din Vivid iq Premium Data Sheet**
APLICAŢII CLINICE: Cardiac	**DA** APLICAŢII CLINICE: Cardiac **pag. 1 din Vivid iq Premium Data Sheet**
PORTURI PENTRU TRADUCTOARE ACTIVE (minim): 3 unităţi (posibil prin multiplicator);	**DA** PORTURI PENTRU TRADUCTOARE ACTIVE (minim): 3 unităţi (posibil prin multiplicator); **DA pag. 2 din Vivid iq Premium Data Sheet – *Cart Design – Multi-probe box***
NIVELE DE GRI (minim): 256;	**DA** NIVELE DE GRI : 256; **pag. 7 din Vivid iq Premium Data Sheet**
GAMA DINAMICĂ (minim): 250dB;	**DA** GAMA DINAMICĂ : 415 dB; **pag. 6 din Vivid iq Premium Data Sheet**
RATA DE CADRE ASIGURATĂ DE DISPOZITIV (minim): 1000 fps	**DA** RATA DE CADRE ASIGURATĂ DE DISPOZITIV : 1000 fps **pag. 6 din Vivid iq Premium Data Sheet**
CANALE PREPROCESARE (minim): 286 500 (digitale) / 512 (fizice) ;	**DA** CANALE PREPROCESARE : 974.026,00 (digitale) **pag. 6 din Vivid iq Premium Data Sheet**
ADÂNCIME DE SCANARE (minim): 33 cm;	**DA** ADÂNCIME DE SCANARE : 33 cm; **pag. 6 din Vivid iq Premium Data Sheet**
DIAPAZON FRECVENTĂ ASIGURATĂ DE DISPOZITIV 1,5-18,0 Mhz (minim);	DIAPAZON FRECVENTĂ ASIGURATĂ DE DISPOZITIV 1,5-20,0 Mhz (minim); **Vezi sondele M5Sc-RS si L4-20t-RS pag. 18-19 din Vivid iq Premium Data Sheet**
TRADUCTOARELE ACCEPTATE DE SISTEM: matriciale, convexe, sectoriale , volumetrice , CW pencil;	**DA** TRADUCTOARELE ACCEPTATE DE SISTEM: matriciale, convexe, sectoriale , volumetrice , CW pencil; **Vezi pag. 18-21 din Vivid iq Premium Data Sheet**
Număr frecvenţe emise de un traductor (minim): 8;	**DA** Număr frecvenţe emise de un traductor (minim): 8; **valabil pentru sondele liniare ML6-15-RS, L4-20t-RS, L8-18i-RS**
POSTPROCESARE DA;	POSTPROCESARE **DA**; **pag. 5 din Vivid iq Premium Data Sheet**
Moduri de imagistică:	Moduri de imagistică: **DA Operating Mode pag.3 din Vivid iq Premium Data Sheet**

M-mod DA;
B-mod DA;
Armonici Tisulare DA;
M-mode anatomic DA (opţional);
M-Mode color DA;
"DOPPLER Tip: continuu (CW),
        pulsativ (PW),
        color (CDI),
        tisular (TDI/TVI). "
	M-mod **DA**;
	B-mod **DA**;
	Armonici Tisulare **DA**;
	M-mode anatomic **DA** (**INCLUS**);
	M-Mode color **DA**;
	"DOPPLER Tip: continuu (CW),**DA**
	        pulsativ (PW), **DA**
	        color (CDI), **DA**
	        tisular (TDI/TVI).**DA** "

Măsurări automatizate DA;	Măsurări automatizate **DA**; **pag. 3 din Vivid iq Premium Data Sheet**
Calcule automate DA;	Calcule automate **DA**; **pag. 3 din Vivid iq Premium Data Sheet**

Anexa 32

Power Doppler DA;	Power Doppler **DA**; **pag. 8 din Vivid iq Premium Data Sheet**
Duplex și Triplex DA	Duplex și Triplex **DA pag. 3-4 din Vivid iq Premium Data Sheet**
MĂSURĂRILE ȘI CALCULE NECESARE :	MĂSURĂRILE ȘI CALCULE NECESARE :
Cordului:	Cordului: **DA pag. 12- 15 din Vivid iq Premium Data Sheet** *Paragraful Cardiac Measuremnets/Calculations*
- Diametru aortă DA;	- Diametru aortă **DA**;
- Diametru atriu stâng DA;	- Diametru atriu stâng **DA**;
- Diametru telediastolic ventriculului stâng DA;	- Diametru telediastolic ventriculului stâng **DA**;
- Diametru telesistolic ventriculului stâng DA;	- Diametru telesistolic ventriculului stâng **DA**;
- Grosimea peretelui ventriculului stâng DA;	- Grosimea peretelui ventriculului stâng **DA**;
- Grosimea sept interventricular DA;	- Grosimea sept interventricular **DA**;
- Grosimea ventricolului drept DA;	- Grosimea ventricolului drept **DA**;
- Volum telediastolic ventricular stâng DA;	- Volum telediastolic ventricular stâng **DA**;
- Volum telesistolic ventricular stâng DA;	- Volum telesistolic ventricular stâng **DA**;
- Calcularea fracției de ejecție al ventriculul stâng DA;	- Calcularea fracției de ejecție al ventriculul stâng **DA**;
- Calcularea fracției de scurtare al ventriculul stâng DA;	- Calcularea fracției de scurtare al ventriculul stâng **DA**;
- Calcularea debitului cardiac DA;	- Calcularea debitului cardiac **DA**;
APLICAȚII CU MĂSURĂRILE ȘI CALCULE OPȚIONAL :(care pot fi instalate/procurate ulterior):	APLICAȚII CU MĂSURĂRILE ȘI CALCULE OPȚIONAL :(care pot fi instalate/procurate ulterior)**DA vor specificate**:
"Vaselor:	"Vaselor:
- Carotida DA;	- Carotida **DA inclus activ cu sonda liniarаă**;
- Vertebrale DA;	- Vertebrale **DA inclus activ cu sonda liniara**;
-Arterial membrelor inferioare și superioare DA;	-Arterial membrelor inferioare și superioare **DA inclus activ cu sonda liniara**;
-Venos membrelor inferioare și superioare DA."	-Venos membrelor inferioare și superioare **DA inclus activ cu sonda liniara**."
FUNCȚIONALITĂȚI:	FUNCȚIONALITĂȚI:
Ajustare frecventa DA;	Ajustare frecventa **DA**; **pag. 4, 7, 8 din Vivid iq Premium Data Sheet;**
Diapazon dinamic reglabil DA;	Diapazon dinamic reglabil **DA; pag. 4, 6 din Vivid iq Premium Data Sheet;**
Număr focusuri minim 4, ajustabile;	Număr focusuri minim 4, ajustabile; **In mod 2D/B-mode este de tip continu, atita cit este adincimea de scanare pe toata adincimea de scanare se focuseaza. Ajustarea focusului este disponibil in regim Doppler Color. pag. 6 din Vivid iq Premium Data Sheet;**
Ajustare mape de culori minim 6;	Ajustare mape de culori minim 6;**DA pag. 7 din Vivid iq Premium Data Sheet;**
Selectare automata a sondei la aplicarea presetului DA;	Selectare automata a sondei la aplicarea presetului **DA; presteul poatul poate fi setat individual la selectarea sondei. La fel este indicat Applications (probe dependent) pag. 3 din Vivid iq Premium Data Sheet;**
Reglare GAIN DA;	Reglare GAIN **DA**; **pag. 6 din Vivid iq Premium Data Sheet;**
TGC DA;	TGC **DA**; **pag. 2 din Vivid iq Premium Data Sheet;**
Funcție de optimizare automată a imaginii DA;	Funcție de optimizare automată a imaginii **DA**; **pag. 9 din Vivid iq Premium Data Sheet;**
Vizualizare simultană duală a imaginii DA;	Vizualizare simultană duală a imaginii **DA**; **pag. 3 din Vivid iq Premium Data Sheet;**
Reglarea semnalului acustic DA;	Reglarea semnalului acustic **DA**;
Măsurători in timp real si in freeze DA;	Măsurători in timp real si in freeze **DA; pag. 449 din Vivid iq - User Manual. In regim pulsativ si CWD este activa**

	masurari in timp ral in regim B-mode cel mai odes se folosesc in regim freez.
Pachet IMT (Intima Media Thickness) cu măsurare automata;	**DA** Pachet IMT (Intima Media Thickness) cu măsurare automata; **pag. 15 din Vivid iq Premium Data Sheet**
Zoom de înaltă definiție DA;	Zoom de înaltă definiție **DA**; **pag. 6 din Vivid iq Premium Data Sheet**
Imagine înghețată DA;	Imagine înghețată **DA**; **pag. 138 din Vivid iq - User Manual**
Spațiul de stocare (minim): 250 GB;	Spațiul de stocare: 250 GB **DA tip SSD**
Memorie CINE (minim): 500 MB sau 45.000 cadre;	Memorie CINE : 500 MB **DA pag. 4 din Vivid iq Premium Data Sheet**;
Porturi extensie	Porturi extensie
USB (minim): 2 unități ;	**DA** USB : 5 unități ; **pag. 91 din Vivid iq - User Manual**
Video/Audio DA;	Video/Audio **DA**; **pag. 91 din Vivid iq - User Manual**
DICOM 3.0 DA;	DICOM 3.0 **DA**; **pag. 5 din Vivid iq - User Manual**
TRADUCTOARE NECESARE MĂSURĂRILOR ENUMERATE CU DIAPAZONUL MINIM:	TRADUCTOARE NECESARE MĂSURĂRILOR ENUMERATE CU DIAPAZONUL MINIM:
Sectorial 1,5~4,0 MHz - 1 unitate;	**DA** Sectorial 1-5 MHz - 1 unitate; **M5Sc-RS pag. 18 din Vivid iq Premium Data Sheet;**
Ultrasonograful livrat să fie setat pentru lucru cu traductoarele livrate;	Ultrasonograful livrat să fie setat pentru lucru cu traductoarele livrate; **DA**
MONITOR FULL HD minim 15 inch.	MONITOR FULL HD **15,6 inch. DA pag. 2 din Vivid iq Premium Data Sheet;**
Rezoluție minim 1024x768;	Rezoluție 1920x1080;**DA pag. 2 din Vivid iq Premium Data Sheet;**
Să permită configurarea meniului și a butoanelor după necesitatea utilizatorului,	Să permită configurarea meniului și a butoanelor după necesitatea utilizatorului, **DA pag. 851 din Vivid iq - User Manual la fe este posibilaitea de configurareaa butoaneleor d epe display care este de tip Touch Screen.**
Posibilitatea efectuării Upgrade DA;	Posibilitatea efectuării Upgrade **DA**; **pag. 1 din Vivid iq - User Manual**
Baterie incorporata, cu durata de lucru minim 60 min	**DA** Baterie incorporata, cu durata de lucru 60 min/1 ore **pag. 2 din Vivid iq - User Manual**
Imprimanta termica alb/negru – 1buc;	Imprimanta termica alb/negru – 1buc; **DA pag. 3 din Vivid iq - User Manual**
DVD/CD RW încorporat DA;	DVD/CD RW încorporat **DA**; **pag. 3 din Vivid iq - User Manual**
TROLIU: â	TROLIU: **DA pag. 2 din Vivid iq Mobile Cart User Instruction**
4 roti, minim 2 blocabile DA;	4 roti, minim 2 blocabile **DA**;
Să asigure reglarea pe verticala diapazonul minim necesar 85-100 cm;	Să asigure reglarea pe verticala diapazonul minim necesar 83,5-111,5 cm; **DA**
Suport pentru imprimanta DA;	Suport pentru imprimanta **DA**;
Sursa de alimentare incorporată DA;	Sursa de alimentare incorporată **DA**;
Alimentare curent alternativ 220V, 50Hz	Alimentare curent alternativ 220V, 50Hz**DA**
"Să fie prezentate mostre video cu opțiunile solicitate (moduri și calcule, sus menționate), obținute de pe un dispozitiv identic propus.	"Să fie prezentate mostre video cu opțiunile solicitate (moduri și calcule, sus menționate), obținute de pe un dispozitiv identic propus. **DA**
Prezentarea mostrei, dispozitivului cu transductorul propus, în oricare instituție din țară ar fi un avantaj."	Prezentarea mostrei, dispozitivului cu transductorul propus, în oricare instituție din țară ar fi un avantaj." **DA la cererea separata de catre utilizator**
Terminul de garanție minim 36 luni (asigurat de agentul economic sau producător).	**DA** Terminul de garanție 36 luni (asigurat de agentul economic sau producător).

Product Description[1]

Vivid™ *iq* combines the proven high performance of the Vivid product line with an ultra-modern and lightweight laptop. Vivid *iq* is a comprehensive digital color flow Doppler ultrasound system. It is designed for cardiac and shared service imaging with support for the following applications: Fetal/Obstetrics, Abdominal (includes GYN), Pediatric, Small Organ (includes breast, testes, thyroid), Neonatal Cephalic, Adult Cephalic, Cardiac (includes Adult and Pediatric), Peripheral Vascular, Musculoskeletal Conventional, Musculoskeletal Superficial, Urology (Including prostate), Transcranial, Transrec-

tal, Transvaginal, Transesophageal, Interventional Guidance (including Biopsy), Thoracic/Pleural, Intraoperative(Vascular), Intracardiac and Intraluminal.

System Architecture

GE Healthcare (GEHC)'s exclusive, patented, beamforming technology provides the power for this multi-purpose ultrasound system. Using both coherent and harmonic image processing, the system provides computational power, ease of imaging, workflow flexibility and product upgradeability.

The Vivid *iq* is designed to excel in the following areas:

Exceptional image quality on the Vivid *iq* is created through ultra- definition clarity filtering and virtual apex (larger field-of-view) for the FPA probes. Coded Harmonics – Produces excellent quality images from even difficult-to-image patients.

Ergonomic Design – Vivid *iq*'s ergonomic design is based on real users' feedback and ex- tensive testing. Its ergonomic user interface design makes the Vivid *iq* an easy-to-learn and highly productive system for experienced and novice users, and similarly for right- and left-hand scanning users alike. The combination of touch screen control, trackpad swipe and click gestures, and a user control panel helps operators maintain their wrist on an ergonomic wrist rest and focus on the patient and ultrasound images during the exam. Other ergonomic features include a touch LCD monitor with easily adjust- able viewing

and typing angles and a height-adjustable cart for comfortable standing and sitting positions.

Ease of use and extreme productivity are provided by GE Healthcare's exclusive technology delivering auto optimized excellent image quality with minimal manipulation, along with automated quantification tools:

- AI-based automated measurements in 2D and Doppler modes help reduce user interaction by up to 80% and save exam time
- Easy AFI LV and Easy AutoEF include AI-based View Recognition and Auto-ROI, reducing the Strain and EF workflows to just one click[2], and allowing to perform analysis on image data acquired with other vendors' ultrasound scanners
- Easy AutoEF now provides calculated bi-plane Ejection Fraction, as a quick and effortless validation of visual assessment. Calculated Ejection Fraction can also be calculated without ECG signal from live or stored images.

Portability and Flexible Workflow – Vivid *iq*'s innovative compact design and touch user interface is ultra-portable and lightweight. The battery option provides additional scanning time without a power supply and instant boot up from standby mode.

Additionally, Vivid *iq* uses the proven **raw data format technology** that allows for advanced processing on archived images by applying many of the

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[1] *Vivid iq Premium version 206 is a configuration of the Vivid iq ultrasound system with software version v206.*

[2] *View Recognition is only applicable to images acquired with TTE probe on GE Healthcare systems.*

same scan controls and advanced quantitative tools as are available during the original exam.

General Specifications

Dimensions and Weight

- Height: 64±1 mm (2.5±0.04 inch) with feet: 73±1 mm (2.9±0.04 inch)
- Width: 390±1 mm (15.4±0.04 inch)
- Depth: 362±1 mm (14.3±0.04 inch)
- Weight with battery: 5.2±0.1 kg (11.5 ±0.2 lbs)

Console Electrical Power

- **Input**
  - 22V d.c., 6.8A
- Scanning time from battery without power supply is approximately one hour[3]

Console Power Adapter Electrical Power

- **Input**
  - Voltage: 100-240 V a.c.
  - Frequency: 50/60 Hz
  - Power: 2.0A max, 175 VA
- **Output**
  - 22V d.c., 6.82A

Operating System

- Windows® 10

Console Design

- Laptop style
- ECG port
- Integrated solid-state drive
- Multiple USB ports (front/back)
- Integrated speakers for premium sound
- CPU – Intel dual core
- DC power input
- USB interface (5)
- HDMI interface
- ECG
- LAN 10/100/1000 base

Cart Dimension

- Height: 835±20 - 1115±20 mm (32.9±0.8 - 43.9±0.8 inch)
- Width: 524.9±10 mm (20.7±0.4 inch)
- Depth: 552.3±10 mm (21.7±0.4 inch)
- Max Weight: 65 kg (143 lbs.) with full configuration (Console, Cart, Multi-probe box, probes, charge box with batteries)

Cart Electrical Power

- **Input**
  - Voltage: 100-240 V a.c.
  - Frequency: 50/60 Hz
  - Power: 300 VA
- **Output**
  - 22V d.c., 10.4A
- An extended battery is integrated within the Vivid *iq* cart and provides approximately three additional scanning hours[3]

Cart Design

- Three USB ports including one isolated USB interface
- Six probe holders
- Four probe cable hooks
- Charge box (optional) – to charge up to three batteries and to scan more than 180 min with four fully charged batteries
- Multi-probe box (optional) – three RS, one DLP to support 6VT-D and 10T-D

Eco Friendly Design

- Vivid *iq* offers an inverted B&W background printing, helping to prevent waste of ink and paper
- eDelivery remote software update solution helps decrease use of hardware drivers and decrease our service field engineers carbon emission footprint.

User Interface

Operator Keyboard

- Innovative track pad design – a new track pad provides new ergonomic gestures, including two-finger swipe to control Depth and Gain and Click to Set, allowing the user's arm to stay rested for a significant time during the exam
- Ergonomic simplified hard key layout with ergonomic design around the track pad
- Interactive back-lighting of application-specific push buttons – adjustable back-light intensity
- Easy-to-learn user interface with intelligent touch keyboard
- Image manager on the touch screen for quick review of image clipboard contents and easy export of images and loops to remote archives or media

Touch Screen

- Full touch ability including tap, double-tap, swipe, and pinch gestures, for fast and highly responsive user experience
- 15.6" ultra-high-resolution, wide screen format, color, multi-touch LCD screen
- On-screen touch keyboard with support for characters in 14 languages
- Interactive user-configurable short-cut software menu
- Application-specific operator and side-bar touch menu controls operated by finger tapping and swiping
- Overall gain, depth and zoom control bar on the touch for easy adjustment
- Touch-screen control of TGC sliders

Monitor

- 15.6" wide screen full High-Definition (HD) flicker-free LCD display with full touch ability
- 16.7 million simultaneous colors available
- Ergonomic FlexFit design with adjustable typing angle and flexible view angle
- Resolution: 1920 x 1080 pixels, full HD
- Fold down and lock mechanism for transportation
- Screen can be adjusted in different angles for scanning mode, typing mode and closing, allowing to optimize the viewing angle in each position
- Backlight adjustable

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[3] *Depending on operation modes used*

- Selectable big image size to use more screen area for the ultrasound image for better visibility from a distance
- Adaptive video formats and resolution

System Overview

Applications (probe dependent)

- Cardiac
- Transesophageal
- Intracardiac and Intraluminal
- Intraoperative
- Interventional guidance
- Peripheral Vascular
- Fetal/Obstetrics
- Abdominal
- Pediatric
- Small Organ
- Neonatal Cephalic
- Adult Cephalic
- Musculoskeletal Conventional
- Musculoskeletal Superficial
- Transcranial
- Transrectal
- Transvaginal
- Thoracic/Pleural
- Urology

Operating Modes

- 2D Tissue
- Tissue M-mode
- Anatomical M-mode
- Curved Anatomical M-mode
- Extended field-of-view (LOGIQ™ View)
- Virtual Convex
- Virtual Apex
- Coded Phase Inversion
- Compound Imaging
- 2D Color Flow
- Multi-Dimensional Color Mode
- 2D Color Angio Flow
- Color M-mode
- Anatomical Color M-mode

- B-flow
- Blood Flow Imaging
- Blood Flow Angio Imaging
- Strain Elastography
- Pulsed Wave Doppler
- Continuous Wave Doppler
- LVO Contrast
- Vascular Contrast (optional)[4]
- Contrast Low MI (optional)[4]
- Tissue Velocity Imaging
- Tissue Tracking
- Tissue Synchronization Imaging (optional)
- Strain Imaging (optional)
- Strain Rate Imaging (optional)
- Tissue Velocity M-mode
- Tissue Velocity Doppler
- Automatic Optimization
- Scan Assist Pro
- Scan Coach
- Pre-Post Compare (optional)
- 2D Stress (optional)
- Automated Function Imaging (AFI) 3.0 (optional)
- Easy AFI LV (optional)
- AFI RV (optional)
- AFI LA (optional)
- Automated Ejection-Fraction (AutoEF) 3.0 (optional)
- Easy AutoEF (optional)
- AI Auto Measure – 2D (optional)
- AI Auto Measure – Spectrum Recognition (optional)
- Bi-plane
- Tri-plane

Scanning Methods

- Electronic sector
- Electronic volume
- Electronic convex
- Electronic linear
- CW pencil

Transducer Types

- Sector phased array
- Convex array
- Linear array
- Single crystal matrix array
- 2D matrix array
- Endovaginal

Peripheral Options

- DVDRW
- Color printer
- B/W video printer with optional inverted background printing, allowing for environmentally sensitive ink saving
- USB memory stick
- One TB USB hard drive
- HDMI cable
- Video converter providing electrically isolated video signals for external monitors
  - digital Full HD 1920 x 1080
  - analogue VGA 800 x 600
- Three-pedal configurable footswitch
- Rolling bag
- Ergonomic wrist rest

Accessories (optional)

- Interface cable for external ECG
- ECG adapter for DIN-type pediatrics electrode leads

Display Modes

- Live and stored display format: Full size and split screen, both with thumbnails, for still and cine
- Instant-review screen displays 12 simultaneous loops/images for a quick study review
- Selectable display configuration of duplex and triplex modes: side-by- side or top-bottom during live, digital replay and clipboard image recall
- Single, dual and quad-screen view
- Simultaneous capability
  - 2D+PW
  - 2D+CW (with 6VT-D probe)

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[4] *GE Healthcare's Vivid scanner is designed for compatibility with commercially available contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is approved for use. The Contrast Low MI and Vascular/Abdominal Contrast options are not available in USA.*

- 2D + CFM/TVI + PW
- 2D + CFM + CW (with 6VT-D probe)
- 2D + CFM/Angio/TVI/SRI/TT/SI/TSI
- 2D + M/AMM/CAMM
- 2D + CFM/Angio/TVI/SRI/TT/SI/TSI + M/AMM/CAMM
- Real-time duplex or triplex mode (with 6VT-D probe)
- Compound + M/CFM/PW
- 2D + bi-plane (with 6VT-D probe)
- 2D + bi-plane + CFM/AMM/CAMM (with 6VT-D probe)
- 2D + tri-plane (with 6VT-D probe)
- 2D + tri-plane + CFM/AMM/CAMM (with 6VT-D probe)
- 2D + color split screen (simultaneous mode)
- Selectable alternating modes
  - 2D or Compound + PW
  - 2D + CW
  - 2D or Compound + CFM/PW
  - 2D + CFM + CW
- Multi-image (split/quad screen)
  - Live and/or frozen
  - Independent cine playback
- Timeline display
  - Independent 2D (or Compound) + PW/CW/M display
  - A choice of display formats with various sizes of 2D + PW/CW/M
- Top/bottom selectable format
- Side/side selectable format

Display Annotation

- Patient name: First, last and middle
- Patient ID
- Additional patient ID
- Age, sex and birth date
- Hospital name
- Date format: Three types selectable – MM/DD/YYYY, DD/MM/YYYY, YYYY/MM/DD
- Time format: Two types selectable – 24 hours, 12 hours
- Gestational age from LMP/EDD/GA
- Probe name
- Probe orientation
- Depth scale marker

- Focal zone markers
- Image depth
- Zoom depth
- B-mode
  - Gain
  - Imaging frequency
  - Frame averaging
  - Dynamic range
  - Gray map
- M-mode
  - Gain
  - Frequency
  - Time scale
  - Dynamic range
- Doppler mode
  - Gain
  - Angle
  - Sample volume size and position
  - Wall filter (Low Velocity Reject)
  - Velocity and/or frequency scale
  - Spectrum inversion
- Time scale
  - PRF
  - Doppler frequency
- Color Flow Doppler mode
  - Frame rate
  - Sample volume size
  - Color scale
  - Power
  - Color baseline
  - Color threshold marker
  - Color gain
  - Frame averaging
- Spectrum inversion
- Acoustic frame rate
- CINE gauge, image number/frame number
- Bodymarks: Multiple human anatomical structures
- Application/preset name
- Measurement results
- Operator message
- Displayed acoustic output
  - TIS: Thermal Index Soft Tissue
  - TIC: Thermal Index Cranial (Bone)
  - TIB: Thermal Index Bone

- MI: Mechanical Index
- Power output in dB
- Biopsy guideline and zone
- Heart rate
- TrackPad-driven annotation arrows
- Active mode display
- Stress protocol parameters
- Parameter annotation follows ASE standard
- Free text with word library
- Scan plane position indicator and probe temperature are displayed with all TEE probes
- Image orientation marker

General System Parameters

System Setup

- Pre-programmable M&A and annotation categories
- Different user presets per probe/application may be stored for quick access
- User programmable preset capability with administrator preset protection
- Factory default preset data, protected against modification
- QuickApps: Factory and user programmable sub-preset feature that keeps 2D and geometry settings while adapting color flow or contrast parameters
- User Interface languages: English, LA Spanish, French, German, Italian, Portuguese (European and Brazilian), Russian, Swedish, Norwegian, Danish, Dutch, Finnish, Chinese
- User-defined annotations
- Body patterns
- Customized comment home position

CINE Memory/Image Memory

- 500 MB of cine memory
- Selectable cine sequence for cine review
- Measurements/calculations and annotations on cine playback
- Scrolling timeline memory
- Dual-image cine display
- Quad-image cine display

- CINE gauge and cine image number display
- CINE review loop
- CINE review speed

Image Storage

- On-board database of patient information from past exams
- User-selectable ECG and time gated acquisition available on touch panel during live scanning
- User-selectable prospective or retrospective capture in config
- Storage formats:
  - DICOM®-compressed/uncompressed, single/multi-frame, with/without raw data, storage via clipboard and/or seamlessly directly to destination device
  - Transfer/ "Save As" JPEG, MPEG, AVI, DICOM, Raw DICOM formats
- Storage devices (optional):
  - USB memory stick: 32 GB
  - CD-RW storage: 700 MB
  - DVD storage: -R (4.7 GB)
  - Mobile hard drive storage: 1 TB
- Compare old images with current exam
- Reload of archived data sets
- Activation control of USB devices (for security)

Annotations

Body Marks

- Body mark icons for location and position of probe
- Option to automatically activate body mark on freeze
- Easy selection of body marks from touch screen
- Easy selection of body marks for dual-screen layout

Text Annotations

- Easy selection of text annotations from touch screen
- Option to automatically activate annotation on freeze

Connectivity and DICOM

- Ethernet network connection

- USB Wireless network connection kit (optional)
- DICOM 3.0
  - Verify
  - Print
  - Store
  - Modality worklist
  - Storage commitment
  - Modality Performed Procedure Step (MPPS)
  - DICOM Media exchange
  - DICOM spooler
  - DICOM Query/Retrieve
- Structured reporting – compatible with adult cardiac, pediatric, vascular and abdominal
- Media store of structured reporting
- InSite™ ExC capability for remote service/access
- Support of two patients' IDs in DICOM
- Separate DICOM SR and image storage destinations
- Simultaneous transfer of DICOM to multiple destinations
- Streaming (optional) sends the image information as digital video stream over Ethernet in real-time to clients
- DICOM PDF Read
- DICOM / TLS (encryption)
- DICOM Implicit Encoding support

Patient Archive

EchoPAC™ Connectivity

- Integrated EchoPAC functionality adds connectivity and image analysis capability to scanner
- Data format fully compatible with offline EchoPAC Plug-in review/reporting stations of same or newer vintage
- EchoPAC Plug-in allows instant access to ultrasound raw data provided by the system
- Comprehensive review, analysis and post-processing capabilities on Echo-PAC Plug-in
- Advanced quantitative analysis and post-processing capabilities
- Q-analysis on raw data from Vivid *iq* on EchoPAC Plug-in

- Three user levels help organize data security requirements
- E-signoff compatibility, with clear indications in patient management screens and report screen that a report was signed off, and by whom and at what time. The signed off report and exam cannot be changed. The "Diagnosing Physician" field is automatically assigned to the user that did the sign-off

Image and Data Management

- Exceptional workflow with instant access data management
- DICOM 3.0 support – see DICOM conformance statement for details
- Support for transfer of the proprietary raw data files within the DICOM standard. With the use of the AI-based View Recognition this can be automated
- 2D, CFM or TVI data at maximum frame rate may be reviewed by scrolling or by running cine loops (can contain more than 1,000 images for imaging modes)
- Image clipboard for stamp-size storage and review of stored images and loops
- Built-in patient archive with images/loops, patient information, measurements and reports
- DICOM-SR Standard structured reporting mechanism
- Structured findings report tools help support efficient text entries with direct editing of findings text, usability enhancements, various configuration options and conclusion section
- User can enter normal values which are then compared to actual measurements
- Configurable HTML-based report function
- Report templates can be customized on board
- ASE-based default text modules (English), user-customizable
- Internal archive data can be exported to removable image storage through DICOM media

- Internal hard disk – for storing programs, application defaults, ultrasound images and patient archive
- All data storage is based on ultrasound raw data, allowing to change gain, baseline, color maps, sweep speeds, etc., for recalled images and loops
- DICOM media – read/write images on DICOM format
- DICOM viewer embedded on media (optional and selectable in Config)
- Alphanumeric data can be exported in Microsoft® Excel® compatible format
- JPEG export ("Save As") for still frames
- AVI and MPEG export ("Save As") for cineloops
- Ability to transfer Systole Only for Stress echo loops to PACS
- Selectable raw data transfer to PACS including AI-based View Recognition for automatic view labelling

CartoSound® Interface (optional)

- The system can interface with the Carto® 3 EP navigation system and the SOUNDSTAR® ultrasound catheters manufactured by Biosense Webster
- The interface allows Vivid *iq* system to send images to the Carto 3 EP system
- Vivid *iq* is able to send ultrasound scaling parameters to the Carto 3 EP system via a peer-to-peer LAN connection

Tricefy® Uplink (optional)[5]

- Tricefy is a Cloud service
- Can serve as long-term archive
- Can be used to share complete examinations with colleagues for information exchange and for consultation
- Can be used to send images to patients

Self-contained DICOM Viewer (optional)

- Exams can be transferred to CD/DVD or USB media with an integrated GE Healthcare Ultrasound DICOM Viewer
- The GE Healthcare Ultrasound DICOM Viewer allows to open and display still images and cline loops from media on

a standard PC without installing any application on the host PC

App Launchpad[5]

- The App Launchpad is a tab available on the Archive screen – when selected, various applications ("Apps") can be launched
- Only validated and released Apps are supported
- 3rd-party Apps can be purchased through an AppStore on a GE Healthcare website
- Consult with a GE Healthcare representative for more details

Raw Data Streaming (optional)

- Provides streaming of raw data out to 3rd-party devices designed to process this data

User Manual Available on Board

User manual and service manual are included on USB flash drive with each system. A printed user manual is available upon request.

Scanning Parameters

- Digital beamformer with up to 974,026 effective digital channels
- Minimum field-of-view (depth): 1 cm (probe dependent)
- Maximum field-of-view (depth): 33 cm (probe dependent)
- Width range: 10° – 168° (probe dependent)
- Continuous dynamic receive focus/continuous dynamic receive aperture
- Composite dynamic range up to 415 dB
- Adjustable dynamic range
- Image reverse: Right/Left
- Image rotation of 0°, 180°
- Touch user-interface inversion for right-hand scanning users

Tissue Imaging

General

- Variable transmit frequencies for resolution/penetration optimization

- Display zoom with zoom area control
- High-Resolution (HR) Zoom – concentrates all image acquisition power into selected Region of Interest (ROI)
- Variable contour filtering – for edge enhancement
- Selectable grayscale parameters (availability preset-dependent): Gain, reject, DDP, clarity, dynamic range and compress – can be adjusted in live, digital replay and image clipboard recall
- Automatically calculated TGC curves help reduce operator interaction
- Automatically calculated lateral gain

2D Mode

- Sector tilt and width control
- Frame rate in excess of 1,000 fps, depending on probe, settings and applications
- Coded octave imaging with coded phase inversion – GE Healthcare 3rd generation harmonic tissue imaging providing enhanced lateral and contrast resolution as compared to previous generation GE Healthcare products. Features help reduce noise, help improve wall definition and axial resolution, making it well suited for a wide variety of patient groups
- Confocal imaging – allows for multiple transmit focal zones over range of view and a high vector density, probes dependent
- Automatic tissue optimization – single keystroke optimizes immediately, automatically and dynamically different grayscale settings with the goal of signal independent uniform gain and contrast distribution
- UD Clarity and UD Speckle Reduction Imaging – an advanced image processing technique to help reduce speckle in real time examining the relative difference between neighboring pixel values and determining whether the grayscale variations have a sharp difference, follow a trend, or are random in nature

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[5] *Tricefy Uplink and App Launchpad may not be available in all countries and regions. Consult with a GE Healthcare representative for more details.*

- Variable image width – a reduction either increases frame rate or increases the number of focal zones while maintaining the frame rate – application dependent
- Multiple-angle Compound Imaging – multiple co-planar images from different angles combined into a single image in real-time to help enhance border definition, contrast resolution and reducing angular dependence of border or edge as compared to no-compound imaging
- LOGIQ View: Provides the ability to construct and view a static 2D image with wider field-of-view of a given transducer. This allows viewing and measurements of anatomy larger than what would fit in a single image
- Virtual convex allows a wider field-of-view (FOV) in the depth to enhance image quality on linear probes
- Virtual apex provides a wider field-of-view with phased array probes, effective at certain imaging views where a wide near field is preferred
- L/R and up/down invert, in live, digital replay or image clipboard recall
- Digital replay for retrospective review or automatic looping of images, allowing for adjustment of parameters such as gain, reject, Anatomical M-mode, persistence and replay speed
- Data Dependent Processing (DDP) performs temporal processing which helps reduce random noise but leaves motion of significant tissue structures largely unaffected – can be adjusted even in digital replay
- 256 shades of gray
- Colorized 2D-mode, user-selectable in real-time, digital replay

Multi-Dimensional Mode (with 6VT-D probe)

- Bi-plane scanning: two independent simultaneous scan planes where one of them can be rotated and tilted freely
- Tri-plane: three independent simultaneous scan planes that can be rotated freely

- Both bi-plane and tri-plane scanning is possible in all color Doppler modes

M-mode

- TrackPad steers M-mode line available with all imaging probes – max steering angle is probe dependent
- Simultaneous real-time 2D- and M-mode
- M-mode PRF 1 kHz – image data acquired is combined to give high-quality recording regardless of display scroll speed
- Digital replay for retrospective review of spectral data
- Several top-bottom formats, side-by-side format and time-motion-only format – can be adjusted in live or digital replay
- Selectable horizontal scroll speed: 1, 2, 3, 4, 6, 8, 12, 16 seconds across display
- Horizontal scroll can be adjusted in live or digital replay

Anatomical M-mode

- M-mode cursor can be adjusted at any plane
- Curved Anatomical M-mode – free (curved) drawing of M-mode generated from the cursor independent from the axial plane
- Can be activated from live, digital replay or image clipboard recall
- Anatomical color and Tissue Velocity M-mode
- M&A capability

Color Doppler Imaging

General

- Steerable color Doppler available with all imaging probes – max steering angle is probe dependent
- TrackPad-controlled ROI
- Touchscreen-controlled ROI
- Removal of color map from the tissue during digital replay
- Digital replay for retrospective review of color or color M-mode data allowing for adjustment of parameters such as encoding principle, color priority and color gain even on stored data

- PRF settings – user-selectable
- Advanced regression wall filter gives efficient suppression of wall clutter
- For each encoding principle, multiple color maps can be selected in live and digital replay – variance maps available
- More than 65,000 simultaneous colors processed, providing a smooth display two-dimensional color maps containing a multitude of color hues
- Simultaneous display of grayscale 2D and 2D with color flow
- Color invert – user-selectable in live and digital replay
- Variable color baseline – user-selectable in live and digital replay
- Multi-variate color priority function gives delineation of disturbed flows even across bright areas of the 2D-mode image
- Color Doppler frequency can be changed independently from 2D

Color Flow Imaging

- TruSpeed imaging allows either ultra-high frame rate or increased lateral resolution as compared to previous generation GE Healthcare products
- Frame Rate in excess of 700 (it is 400 on 12S-RS) fps, depending on probe and settings
- Variable ROI size in width and depth
- User-selectable radial and lateral averaging to help reduce statistical uncertainty in color velocity and variance estimates
- Data Dependent Processing (DDP) performs temporal processing and display smoothing to help reduce loss of transient events of hemodynamic significance
- Digital replay for retrospective review or automatic looping of color images, allowing for adjustment of parameters such as DDP, encoding principle, baseline shift, color maps, color priority and color gain even on frozen/recalled data
- Application-dependent, multi-variate motion discriminator helps reduce flash artifacts

- Dedicated coronary flow application
- Multiple-angle compound imaging in 2D mode is maintained while in color Doppler mode

Multi-Dimensional Color Mode (with 6VT-D probe)

- Bi-plane and tri-plane scanning with all color Doppler and tissue velocity modes

Color Angio

- Angle-independent power Doppler mode for visualization of slow flow vessels with enhanced sensitivity compared to standard color flow of previous GE Healthcare products

Color M-mode

- Variable ROI length and position – user-selectable
- User-selectable radial averaging to help reduce statistical uncertainty in color velocity and variance estimates
- Selectable horizontal scroll speed: 1, 2, 3, 4, 6, 8, 12, 16 seconds across display – can be adjusted during live, digital replay or image clipboard recall
- Real-time 2D image while in color M-mode
- Same controls and functions available as in standard 2D color Doppler

Anatomical Color M-mode

- GE Healthcare-patented, any plane color M-mode display derived from color Doppler cine loop
- Applicable to Tissue Velocity Imaging
- M&A capability

B-flow

- B-flow is a digital imaging technique that provides real-time visualization of vascular hemodynamics by directly visualizing blood reflectors and presenting this information in a grayscale display
- Use of GE Healthcare-patented techniques to boost blood echoes, and to help preferentially suppress non-moving tissue signals
- B-flow is available for most vascular and shared service applications

Blood Flow Imaging

- Combines color Doppler with grayscale speckle imaging
- Helps improve delineation of blood flow without bleeding into tissue or vessel wall

Blood Flow Angio Imaging

- Combines angio with grayscale speckle imaging

Strain Elastography

- Visualization of relative tissue stiffness

Spectral Doppler

General

- Operates in PW, HPRF and CW modes
- TrackPad steerable Doppler available with all imaging probes – max steering angle is probe dependent
- Selectable Doppler frequency for enhanced optimization
- High-quality, real-time duplex or triplex operation in all Doppler modes, CW and PW, and for all velocity settings
- Frame rate control for optimized use of acquisition power between spectrum, 2D and color Doppler modes in duplex or triplex modes
- Very fast and flexible spectrum analysis with an equivalent DFT rate of 0.2 ms
- Automatic Spectrum Optimization (ASO) provides a single push, automatic, real-time optimization of PW or CW spectrum scale, and baseline display
- Dynamic gain compensation for display of flows with varying signal strengths over the cardiac cycle to help improve ease of use
- Dynamic reject gives consistent suppression of background – user-selectable in real-time, digital replay or image clipboard recall
- Digital replay for retrospective review of spectral Doppler data
- Several top-bottom formats, side-by-side format and time- motion-only format – can be adjusted in live or digital replay

- Selectable horizontal scroll speed: 1, 2, 3, 4, 6, 8, 12, 16 seconds across display – can be adjusted in live or digital replay
- Adjustable spectral Doppler display parameters: gain, reject, compress, color maps – can be adjusted in live or digital replay
- User-adjustable baseline shift – in live, digital replay and image clipboard recall
- Adjustable velocity scale (depending on probe and setting)
- Wall filters with range 10-2000 Hz (velocity scale dependent)
- Angle correction with automatic adjustment of velocity scale – in live, digital replay and image clipboard recall
- Auto Doppler angle
- Stereo speakers mounted in the front panel
- Display annotations of frequency, mode, scales, Nyquist limit, wall filter setting, angle correction, acoustic power indices
- Compound in duplex

PW/HPRF Doppler

- Automatic HPRF Doppler maintains its sensitivity even for shallow depths and with high PRF's
- Digital velocity tracking Doppler employs processing in range and time for high-quality spectral displays
- Adjustable sample volume size of 1-16 mm (probe dependent)
- Maximum sample volume depth 30 cm

CW Doppler

- Highly sensitive steerable CW available with all phased array probes
- Tissue Velocity Doppler

Contrast Imaging (optional)

LV Contrast (accessed through QuickApps)

- Enables contrast applications intended for imaging of the left ventricle
- LV harmonic contrast imaging(3Sc-RS probe) enhances delineation of the LV border in combination with ultrasound

contrast agents. The new implementation of GE Healthcare's Coded Phase Inversion (CPI) provides high- resolution detection of contrast in the LV cavity and excellent suppression of myocardial tissue signals

Contrast Low MI (optional)[6]

Contrast Low MI imaging is enabled by the Advanced Contrast option. Contrast Low MI is a preset that enables real-time continuous imaging of microbubbles using a low enough MI to generate return signals from the bubbles without destroying them. The user can choose between two types of transmit techniques controlled by the Frequency rotary: Power Modulation and Pulse Inversion, each with different characteristics that may affect imaging performance depending on the type of microbubbles being used.

- A high MI Flash feature is available to rapidly destruct bubbles. Other controls are also available for image acquisition optimization.
- Imaging can be performed in live or with ECG triggering.
- The contrast intensity can be quantified using the QAnalysis package.
- The option may not be available in all countries.

Vascular/Abdominal Contrast (optional)[6]

Vascular contrast – enables contrast applications intended for vascular (9L-RS) and abdominal (C1-5-RS) contrast imaging. The option may not be available in all countries.

- Vascular contrast (9L-RS) – coded phase inversion enables excellent detection and resolution of vascular contrast imaging

Tissue Velocity Imaging

Tissue Velocity Imaging Mode

- Myocardial Doppler imaging with color overlay on tissue image

- Tissue Doppler data can be acquired in background during regular 2D imaging
- The velocity of myocardial segments after entire heart cycle can be displayed in one single image
- Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information
- Quantitative profiles for TVI, Tissue Tracking, strain and strain rate can be derived
- Time markers for valve events derived from any TM mode help simplify understanding of signals in velocity traces or Curved Anatomical M-mode

Tissue Tracking Mode

- Real-time display of the time integral of TVI for quantitative display of myocardial systolic displacement
- Myocardial displacement is calculated and displayed as a color-coded overlay on the grayscale and M-mode image – different colors represent different displacement ranges

Tissue Synchronization Imaging Mode (optional, enabled by Advanced QScan)

- Parametric imaging which gives information about synchronicity of myocardial motion
- Myocardial segments colored according to time to peak velocity, green for early and red for late peak
- Waveform trace available to obtain quantitative time to peak measurement from TSI Image
- Available in live scanning, as well as an offline calculation derived from Tissue Doppler data
- Additional features in combination with multi-dimensional imaging option
- Simultaneous acquisition of tri-plane TSI images covering all standard segments in apical views (with 6VT-D probe)
- Efficient segment specific TSI time measurements
- Immediate bull's eye report

- Automatic calculated TSI synchrony indexes
- TSI surface mapping
- LV synchronization report template
- CRT programming protocol

Strain/Strain Rate Mode (optional, enabled by Advanced QScan)

- Tissue deformation (strain) and rate of deformation (strain rate) are calculated and displayed as real-time, color-coded overlay on the 2D image
- Cine Compound calculates and displays cineloops generated from a temporal averaging of multiple consecutive heart cycles
- Anatomical M-mode and Curved Anatomical M-mode displays (SI and SRI)

Physiological Traces

- Integrated three-lead ECG module
- Automatic QRS complex detection with user ability to modify QRS trigger positions
- External ECG lead input
- Internally generated respiratory trace using ECG leads
- ECG trigger
- ECG lead selection
- Adjustable ECG QRS markers

Automatic Optimization

- Optimize B-mode image to help improve contrast resolution, gain, TGC and grayscale
- Auto Spectral Optimize (ASO) – dynamic adjustments of baseline, PRF (on live image) and angle correction

Protocol Features

Scan Assist Pro

- Customizable automations that assist the user through each step of the scan
- Helps enhance consistency and reduce keystrokes

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[6] *GE Healthcare's Vivid scanner is designed for compatibility with commercially available contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is approved for use. The Contrast Low MI and Vascular/Abdominal Contrast options are not available in USA.*

- Ultrasound image, anatomical picture, step by step training through a pre-defined protocol
- Supports selection of all modes, all measurements and dual annotations
- Imaging attributes: Octave, Steer, Dual/Quad screen, Compound, LOGIQ View, Zoom, Depth, Scale and Baseline
- On-line or off-line protocol editor
- Image acquisition according to predefined protocol templates
- Various factory protocol templates
- User-configurable protocol templates

Scan Coach

- A reference tool that provides modules depicting basic scanning techniques with animated graphics of probe position, schematic of anatomy and reference clinical image
- Exam protocols can be customized based on local guidelines

Pre-Post Compare (optional)

- Labelling of measurements and images acquired in different stages of an exam or procedure, allowing to compare measurements pre and post procedure.

Smart Stress Echo (optional)

Supported Protocol Examinations

- 2D pharmacological stress echo
- 2D bicycle stress echo
- 2D continuous capture stress echo (treadmill stress echo)
- Q-Stress protocols (acquire tissue velocity data in background for quantitative analysis)
- Cardiac resynchronization therapy programming protocols (available with the Advanced QScan option)

Protocol Examinations Features (enabled with Smart Stress option)

- Wall motion scoring: Analysis by wall motion in individual myocardial segments
- Show reference: Show a reference image from baseline or previous level during acquisition

- Smart stress: Automatically set up various scanning parameters (for instance geometry, frequency, gain, etc.) according to same projection on previous level
- Scan mode settings: Scan mode may be specified for individual views in the protocol
- Stress protocol editor with over 10 levels and maximum 10 projections
- Preview of store: Show running loops as preview before storing to the examination

Continuous Capture

- Continuously acquire large amounts of 2D image data, and selection of projection views for analysis afterwards
- The entire continuous capture recording may be kept in memory while it is possible to store new images outside the protocol template, or the entire recording can be stored to file
- Selection of projection views on Echo-PAC SW Only when the entire recording is stored to file

Wall Motion Scoring

- As part of the measurement and analysis package one can access a wall motion assessment module, providing analysis/scoring of individual myocardial segments
- For use with all stress modalities

Cardiac Resynchronization Therapy (CRT) Programming Protocols

- CRT protocols require Smart Stress and Advanced QScan
- Tailored acquisition protocol for data needed for programming of AV and VV delays in biventricular pacemakers
- Image acquisition of a set of projection views with various scan mode settings
- Template editor
- User-configurable protocol templates
- Configure protocol name, number of levels and views, name of level and views and several other protocol settings (smart stress, show reference, scan mode, preview of store, timer handling, etc.)

Measurement and Analysis (M&A)

- Personalized measurement protocols allow individual set and order of M&A items
- Measurements can be labeled seamlessly by using protocols or post assignments
- Measurements assignable to protocol capability
- Parameter annotation follows ASE standard
- Seamless data storage and report creation
- User-assignable parameters
- Comprehensive set of adult and pediatric cardiac measurements and calculations to help assess dimensions, flow properties and other functional parameters of the heart
- Comprehensive set of shared service measurements and calculations covering vascular, abdominal, obstetrics and other application areas
- Configuration package to set up a customized set and sequence of measurements to use, defining user-defined measurements and changing settings for the factory- defined measurements
- Stress echo support allowing wall motion scoring and automatic stress level labeling of measurements
- Stress echo is directly accessible from the system control panel with a dedicated button
- Support for measuring on DICOM images
- AI-based Cardiac Auto 2D Measurement (optional) enables automated quantification of the most common distance measurements performed on parasternal LAX 2D images, with minimum user guidance
- AI-based Spectrum Recognition (optional) enables automated recognition of the most common Doppler spectra and automatically starts the Auto Doppler measurement (where available), or opens the according manual measurement

- Cardiac Auto Doppler automatically provides Doppler measurement results for the most common parameters with minimal user guidance
- Automatic Doppler trace functionality for use in non-cardiac applications in both live and replay
- Worksheet allows user to review, edit and delete performed measurements
- Reporting support allowing a configurable set of measurements to be shown in the exam report
- DICOM SR export of measurement data

Automated Function Imaging (AFI 3.0) (optional)

- Third generation parametric imaging tool which gives quantitative data for global and segmental strain
- Allows comprehensive assessment at a glance by combining three apical longitudinal views into one comprehensive bull's eye view
- Integrated into M&A package with specialized report templates
- 2D strain based data moves into clinical practice
- Simplified and flexible workflow with fully automated ROI tracing (if configured), adaptive ROI width and combined display of traces from all segments
- User-selectable endo or full wall global strain values displayed
- Random sequence of analysis of the three views supported
- Ability to exit tool after one or two views completed
- Applicable to transthoracic and 2D TEE data
- Integrated AutoEF calculation
- On-scanner automatic labelling of views during acquisition enabled by an intelligent algorithm called View Recognition, is used to simplify the AFI workflow eliminating the need to pick views

- Can process GE Healthcare raw data and DICOM data acquired with other vendors' Ultrasound scanners

Easy AFI LV (optional)

- Automated one-click AFI LV analysis. Our AI-based Auto ROI detection algorithm allows users to complete the AFI workflow with no manual interaction apart from initiating the measurement tool and approving the results

Automated Function Imaging for the Right Ventricle (AFI RV) (optional)

- Parametric imaging tool which gives quantitative data for right ventricular longitudinal Global Strain, Free Wall Strain and Segmental Strain derived from the apical 4-chamber RV focused view
  - Tricuspid Annular Plane Systolic Excursion (TAPSE) provided
  - Simplified and flexible workflow with 3-point click method for ROI selection, supports editing of both endo- and epicardial borders and adaptive ROI width
  - Combined display of traces from all segments
- User-selectable endo or full wall global strain values displayed

Automated Function Imaging for the Left Atrium (AFI LA) (optional)

- Parametric tool giving quantitative data from GE Healthcare raw data images for LA longitudinal global wall strain, LA volumes and Emptying Fraction
  - Single-plane (4-channel or 2-channel) or bi-plane (4-channel or 2-channel) measurement
  - Simplified and flexible workflow with 3-point click method for ROI selection and adaptive ROI width
  - Full wall tracking

Automated Ejection-Fraction Calculation (AutoEF 3.0) (optional)

- Third generation automated 2D EF measurement tool based on 2D

speckle tracking algorithm and on Simpson
- Calculated Ejection Fraction with or without ECG signals with automated[7] workflow from a frozen image in 2-chamber or 4-chamber view.
- Calculated bi-plane Ejection Fraction with or without ECG signal from recalled images.
- Integrated into M&A package with worksheet summary
- Can process GE Healthcare raw data and DICOM data acquired with other vendors' Ultrasound scanners

Easy AutoEF (optional)

- Automated one-click Ejection Fraction (EF) measurement. Our AI-based Auto ROI detection algorithm allows users to complete the Ejection Fraction (EF) measurement on loops acquired with or without ECG signal, and with no manual interaction apart from initiating the measurement tool and approving the results

Quantitative Analysis Package (Q-Analysis)

- Traces for tissue velocity or derived parameters (strain rate, strain, displacement) inside defined regions of interest as function of time
- Contrast analysis with traces for gray-scale intensity or angio power inside defined regions of interest as function of time
- Curved Anatomical M-mode display allowing an M-mode along an arbitrary curve in a 2D image
- Sample-area points may be dynamically anchored to move with the tissue when running the cineloop
- Cine Compound displays cineloops generated from a temporal averaging of multiple consecutive heart cycles

Generic Measurements

- BSA (Body Surface Area)
- MaxPG (Maximum Pressure Gradient)
- MeanPG (Mean Pressure Gradient)

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[7] *Automated refers to workflow potentially involving no user interaction before approval; users can adjust contours and frame selection during the process.*

- % Stenosis (Stenosis Ratio)
- PI (Pulsatility Index)
- RI (Resistivity Index)
- HR (Heart Rate) – beats/minute
- A/B Ratio (Velocities Ratio)
- TAMAX (Time Averaged Maximum Velocity) – Trace method is Peak or Manual
- TAMIN (Time Averaged Minimum Velocity) – Trace method is Floor
- TAMEAN (Time Averaged Mean Velocity) – Trace method is Mean
- Volume
- Area
- Spline Tool

Cardiac Measurements/Calculations

- %FS (LV Fractional Shortening)
- %IVS Thck (IVS Fractional Shortening)
- %LVPW Thck (LV Posterior Wall Fractional Shortening)
- Ao Arch Diam (Aortic Arch Diameter)
- Ao Asc (Ascending Aortic Diameter)
- Ao Desc Diam (Descending Aortic Diameter)
- Ao Isthmus (Aortic Isthmus)
- Ao Root Diam (Aortic Root Diameter)
- AR ERO (PISA: Regurgitant Orifice Area)
- AR Flow (PISA: Regurgitant Flow)
- AR PHT (AV Insuf. Pressure Half Time)
- AR Rad (PISA: Radius of Aliased Point)
- AR RF (Regurgitant Fraction over the Aortic Valve)
- AR RV (PISA: Regurgitant Volume Flow)
- AR Vel (PISA: Aliased Velocity)
- AR Vmax (Aortic Insuf. Peak Velocity)
- AR VTI (Aortic Insuf. Velocity Time Integral)
- ARed max PG (Aortic Insuf. End-Diastole Pressure Gradient)
- ARed Vmax (Aortic Insuf. End-Diastolic Velocity)
- AV Acc Slope (Aortic Valve Flow Acceleration)
- AV Acc Time (Aortic Valve Acceleration Time)

- AV AccT/ET (AV Acceleration to Ejection Time Ratio)
- AV EOAI (VTI) (Aortic Valve Effective Orifice Area Index by Continuity Equation VTI)
- AV EOAI Vmax (Aortic Valve Effective Orifice Area Index by Continuity Equation Peak V)
- AV CO (Cardiac Output by Aortic Flow)
- AV Cusp (Aortic Valve Cusp Separation, 2D)
- AV Dec Time (Aortic Valve Deceleration Time)
- AV Diam (Aortic Diameter, 2D)
- AV max PG (Aortic Valve Peak Pressure Gradient)
- AV mean PG (Aortic Valve Mean Pressure Gradient)
- AV SV (Stroke Volume by Aortic Flow)
- AV Vmax (Aortic Valve Peak Velocity)
- AV Vmean (AV Mean Velocity)
- AV VTI (Aortic Valve Velocity Time Integral)
- AVA (Vmax) (AV Area by Continuity Equation by Peak V)
- AVA (VTI) (AV Area by Continuity Equation VTI)
- AVA Planimetry (Aortic Valve Area)
- AVET (Aortic Valve Ejection Time)
- CO (Teich) (Cardiac Output, M-mode, Teicholtz)
- D-E Excursion (MV Anterior Leaflet Excursion)
- E' Avg (Averaged Early Diastolic Mitral Valve Annular Velocity)
- E' Lat (Early Diastolic Mitral Valve Lateral Annular Velocity)
- E' Sept (Early Diastolic Mitral Valve Septal Annular Velocity)
- E/E' Avg (Mitral Inflow E Velocity to E' Avg Ratio)
- E/E' Lat (Mitral Inflow E Velocity to E' Lat Ratio)
- E/E' Sept (Mitral Inflow E Velocity to E' Sept Ratio)
- EDV (Cube) (Left Ventricle Volume, Diastolic, 2D, Cubic)

- EF (A-L A2C) (Ejection Fraction 2CH, Single Plane, Area-Length)
- E-F Slope (Mitral Valve E-F Slope)
- EPSS (E-Point-to-Septum Separation, M-mode)
- ERO (Effective Regurgitant Orifice)
- ESV (Cube) (Left Ventricle Volume, Systolic, 2D, Cubic)
- HR (Heart Rate, 2D, Teicholtz)
- IVC (Inferior Vena Cava)
- IVCT (Isovolumic Contraction Time)
- IVRT (Isovolumic Relaxation Time)
- IVSd (Interventricular Septum Thickness, Diastolic, 2D)
- VSs (Interventricular Septum Thickness, Systolic, 2D)
- LA Diam (Left Atrium Diameter, 2D)
- LA Major (Left Atrium Major)
- LA Minor (Left Atrium Minor)
- LA/Ao (LA Diameter to AoRoot Diameter Ratio, 2D)
- LAAd (A2C) (Left Atrium Area, Apical 2C)
- LAEDV (A-L) (LA End Diastolic Volume, Area- Length)
- LAEDV Index (A-L) (LA End Diastolic Volume Index, Area-Length)
- LAESV (A-L) (LA End Systolic Volume, Area-Length)
- LAESV Index (A-L) (LA End Systolic Volume Index, Area-Length)
- LAEDV MOD (LA End Diastolic Volume MOD)
- LAESV MOD (LA End Systolic Volume MOD)
- LIMP (Left Index of Myocardial Performance)
- LVA (s) (Left Ventricular Area, Systolic, 2CH)
- LVAd (A2C) (Left Ventricular Area, Diastolic, 2CH)
- LVAd (SAX) (LV Area, SAX, Diastolic)
- LVAend (d) (LV Endocardial Area, SAX)
- LVAepi (d) (LV Epicardial Area, SAX)
- LVAs (A4C) (Left Ventricular Area, Systolic, 4CH)
- LVAs (SAX) (LV area, SAX, Systolic)

- LVd Mass (LV Mass, Diastolic, 2D)
- LVd Mass (LV Mass, Diastolic, M-mode)
- LVd Mass Index (LV Mass Index, Diastolic, 2D)
- LVEDV (A-L A2C) (LV Volume, Diastolic, 2CH, Area-Length)
- LVESV (A-L A2C) (LV Volume, Systolic, 2CH, Area-Length)
- LVET (Left Ventricle Ejection Time)
- LVIDd (LV Internal Dimension, Diastolic, 2D)
- LVIDs (LV Internal Dimension, Systolic, 2D)
- LVLd (Apical) (Left Ventricular Length, Diastolic, 2D)
- LVLs (Apical) (Left Ventricular Length, Systolic, 2D)
- LVOT Area (Left Ventricle Outflow Tract Area)
- LVOT CO (Cardiac Output by Aortic Flow)
- LVOT Diam (Left Ventricular Outflow Tract Diameter)
- LVOT Max PG (LVOT Peak Pressure Gradient)
- LVOT Mean PG (LVOT Mean Pressure Gradient)
- LVOT SI (Stroke Volume Index by Aortic Flow)
- LVOT SV (Stroke Volume by Aortic Flow)
- LVOT Vmax (LVOT Peak Velocity)
- LVOT Vmean (LVOT Mean Velocity)
- LVOT VTI (LVOT Velocity Time Integral)
- LVPWd (Left Ventricular Posterior Wall Thickness, Diastolic, 2D)
- LVPWs (Left Ventricular Posterior Wall Thickness, Systolic, 2D)
- LVs Mass (LV Mass, Systolic, 2D)
- LVs Mass Index (LV Mass Index, Systolic, 2D)
- LAAd (A2C) (Left Atrium Area, Apical 2C)
- MCO (Mitral Valve Closure to Opening)
- MP Area (Mitral Valve Prosthesis)
- MR Acc Time (MV Regurg. Flow Acceleration)

- MR ERO (PISA: Regurgitant Orifice Area)
- MR Flow (PISA: Regurgitant Flow)
- MR Max PG (Mitral Regurg. Peak Pressure Gradient)
- MR Rad (PISA: Radius of Aliased Point)
- MR RF (Regurgitant Fraction Over the Mitral Valve)
- MR RV (PISA: Regurgitant Volume Flow)
- MR Vel (PISA: Aliased Velocity)
- MR Vmax (Mitral Regurg. Peak Velocity)
- MR Vmean (Mitral Regurg. Mean Velocity)
- MR VTI (Mitral Regurg. Velocity Time Integral)
- MV A Dur (Mitral Valve A-Wave Duration)
- MV A Velocity (MV Velocity Peak A)
- MV Acc Slope (Mitral Valve Flow Acceleration)
- MV Acc Time (Mitral Valve Acceleration Time)
- MV Acc/Dec Time (MV: Acc.Time/Decel.Time Ratio)
- MV Ann Diam (Mitral Valve Annulus Diameter, 2D)
- MV CO (Cardiac Output by Mitral Flow)
- MV Dec Slope (Mitral Valve Flow Deceleration)
- MV Dec Time (Mitral Valve Deceleration Time)
- MV E Velocity (MV Velocity Peak E)
- MV E/A Ratio (Mitral Valve E-Peak to A-Peak Ratio)
- MV Max PG (Mitral Valve Peak Pressure Gradient)
- MV Mean PG (Mitral Valve Mean Pressure Gradient)
- MV PHT (Mitral Valve Pressure Half Time)
- MV Reg Frac (Mitral Valve Regurgitant Fraction)
- MV SI (Stroke Volume Index by Mitral Flow)
- MV SV (Stroke Volume by Mitral Flow)
- MV Time to Peak (Mitral Valve Time to Peak)

- MV Vmax (Mitral Valve Peak Velocity)
- MV Vmean (MV Mean Velocity)
- MV VTI (Mitral Valve Velocity Time Integral)
- MVA (Mitral Valve Area)
- MVA By PHT (Mitral Valve Area according to PHT)
- MVA by Plan (Mitral Valve Area, 2D)
- MVET (Mitral Valve Ejection Time)
- P Vein A (Pulmonary Vein Velocity Peak A) – Reverse
- P Vein A Dur (Pulmonary Vein A-Wave Duration)
- P Vein D (Pulmonary Vein End-Diastolic Peak Velocity)
- P Vein S (Pulmonary Vein Systolic Peak Velocity)
- PAEDP (Pulmonary Artery Diastolic Pressure)
- PE(d) (Pericard Effusion, M-mode)
- PEs (Pericard Effusion, 2D)
- PR Max PG (Pulmonic Insuf. Peak Pressure Gradient)
- PR Mean PG (Pulmonic Insuf. Mean Pressure Gradient)
- PR PHT (Pulmonic Insuf. Pressure Half Time)
- PR Vmax (Pulmonic Insuf. Peak Velocity)
- PR VTI (Pulmonic Insuf. Velocity Time Integral)
- PRend Max PG (Pulmonic Insuf. End-Diastole Pressure Gradient)
- PRend Vmax (Pulmonic Insuf. End-Diastolic Velocity)
- Pulmonic Diam (Pulmonary Artery Diameter, 2D)
- PV Acc Slope (Pulmonic Valve Flow Acceleration)
- PV Acc Time (Pulmonic Valve Acceleration Time)
- PV Acc Time/ET Ratio (PV Acceleration to Ejection Time Ratio)
- PV Ann Diam (Pulmonic Valve Annulus Diameter, 2D)
- PV Ann Area (Pulmonic Valve Area)

- PV CO (Cardiac Output by Pulmonic Flow)
- PV Max PG (Pulmonic Valve Peak Pressure Gradient)
- PV Mean PG (Pulmonic Valve Mean Pressure Gradient)
- PV SV (Stroke Volume by Pulmonic Flow)
- PV Vmax (Pulmonary Artery Peak Velocity)
- PV Vmean (PV Mean Velocity)
- PV VTI (Pulmonic Valve Velocity Time Integral)
- PVA (VTI) (Pulmonary Artery Velocity Time Integral)
- PVein S/D Ratio (Pulmonary Vein SD Ratio)
- PVET (Pulmonic Valve Ejection Time)
- PVPEP (Pulmonic Valve Pre-Ejection Period)
- PVPEP/ET Ratio (PV Pre-Ejection to Ejection Time Ratio)
- Qp/Qs (Pulmonic-to-Systemic Flow Ratio)
- RA Major (Right Atrium Major, 2D)
- RA Minor (Right Atrium Minor, 2D)
- RAA (d) (Right Atrium Area, 2D, Diastole)
- RAA (s) (Right Atrium Area, 2D, Systole)
- RAEDV A2C (Right Atrium End Diastolic Volume, Apical 2 Chamber)
- RAESV A-L (RA End Systole Volume [A-L])
- RALd (Right Atrium Length, Diastole)
- RALs (RA Length, Systole)
- RIMP (Right Index of Myocardial Performance)
- RJA (A4C) (Regurgitant Jet Area)
- RJA/LAA (Regurgitant Jet Area Ratio RJA/LAA)
- RV Major (Right Ventricle Major)
- RV Minor (Right Ventricle Minor)
- RV S' (Tricuspid Annulus Systolic Excursion Velocity)
- RVAWd (Right Ventricle Wall Thickness, Diastolic, 2D)

- RVAWs (Right Ventricle Wall Thickness, Systolic, 2D)
- RVET (Right Ventricle Ejection Time)
- RVIDd (Right Ventricle Diameter, Diastolic, 2D)
- RVIDs (Right Ventricle Diameter, Systolic, 2D)
- RVOT Area (Right Ventricle Outflow Tract Area)
- RVOT Diam (RV Output Tract Diameter, 2D)
- RVOT Diam (RV Output Tract Diameter, M-mode)
- RVOT Max PG (RVOT Peak Pressure Gradient)
- RVOT Mean PG (RVOT Mean Pressure Gradient)
- RVOT SI (LV Stroke Volume Index by Pulmonic Flow)
- RVOT SV (Stroke Volume by Pulmonic Flow)
- RVOT Vmax (RVOT Peak Velocity)
- RVOT Vmean (RVOT Mean Velocity)
- RVOT VTI (RVOT Velocity Time Integral)
- RVSP (Right Ventricle Systolic Pressure)
- RVWd (Right Ventricle Wall Thickness, Diastolic, M-mode)
- RVWs (Right Ventricle Wall Thickness, Systolic, M-mode)
- RAA (d) (Right Atrium Area, 2D, Diastole)
- RAA (s) (Right Atrium Area, 2D, Systole)
- SI (A-L A2C) (LV Stroke Index, Single Plane, 2CH, Area-Length)
- SI (A-L A4C) (LV Stroke Index, Single Plane, 4CH, Area-Length)
- SI (Bi-plane) (LV Stroke Index, Bi-plane, MOD)
- SI (bullet) (LV Stroke Index, Bi-plane, Bullet)
- SI (MOD A2C) (LV Stroke Index, Single Plane, 2CH, MOD)
- SI (MOD A4C) (LV Stroke Index, Single Plane, 4CH, MOD)
- SI (Teich) (LV Stroke Index, Teicholtz, 2D)
- SI (Teich) (LV Stroke Index, Teicholtz, M-mode)

- SV (A-L A2C) (LV Stroke Volume, Single Plane, 2CH, Area-Length)
- SV (A-L A4C) (LV Stroke Volume, Single Plane, 4CH, Area-Length)
- SV (Bi-plane) (LV Stroke Volume, Bi-plane, MOD)
- SV (Bullet) (LV Stroke Volume, Bi-plane, Bullet)
- SV (MOD A2C) (LV Stroke Volume, Single-plane, 2CH, MOD) – Simpson
- SV (MOD A4C) (LV Stroke Volume, Single-plane, 4CH, MOD) – Simpson
- SV (Cube) (LV Stroke Volume, 2D, Cubic)
- SV (Cube) (LV Stroke Volume, M-mode, Cubic)
- SV (Teich) (LV Stroke Volume, 2D, Teicholtz)
- SV (Teich) (LV Stroke Volume, M-mode, Teicholtz)
- Systemic Diam (Systemic Vein Diameter, 2D)
- Systemic Vmax (Systemic Vein Peak Velocity)
- Systemic VTI (Systemic Vein Velocity Time Integral)
- TAPSE (Tricuspid Annular Plane Systolic Excursion)
- TCO (Tricuspid Valve Closure to Opening)
- TR Max PG (Tricuspid Regurg. Peak Pressure Gradient)
- TR Mean PG (Tricuspid Regurg. Mean Pressure Gradient)
- TR Vmax (Tricuspid Regurg. Peak Velocity)
- TR Vmean (Tricuspid Regurg. Mean Velocity)
- TR VTI (Tricuspid Regurgitation Velocity Time Integral)
- TV A Dur (Tricuspid Valve A-Wave Duration)
- TV A Velocity (Tricuspid Valve A Velocity)
- TV Acc Time (Tricuspid Valve Time to Peak)
- TV Ann Area (Tricuspid Valve Area)
- TV Ann Diam (Tricuspid Valve Annulus Diameter, 2D)

- TV Area (Tricuspid Valve Area, 2D)
- TV CO (Cardiac Output by Tricuspid Flow)
- TV Dec Slope (Tricuspid Valve Flow Deceleration)
- TV E Velocity (Tricuspid Valve E Velocity)
- TV E/A Ratio (Tricuspid Valve E-Peak to A-Peak Ratio)
- TV Max PG (Tricuspid Valve Peak Pressure Gradient)
- TV Mean PG (Tricuspid Valve Mean Pressure Gradient)
- TV Mean PG (Tricuspid Valve Mean Pressure Gradient)
- TV PHT (Tricuspid Valve Pressure Half Time)
- TV SV (Stroke Volume by Tricuspid Flow)
- TV Vmean (TV Mean Velocity)
- TV VTI (Tricuspid Valve Velocity Time Integral)
- VSD Max PG (VSD Peak Pressure Gradient)
- VSD Vmax (VSD Peak Velocity)

Please refer to the Reference Manual for the full list of measurements and calculations for all applications.

Z-Scores

- Support for six sets of user-selectable Z score publications[8] covering the most common pediatric dimension measurements

Vascular Measurements/Calculations

- RT ECA (Right External Carotid Artery Velocity)
- RT CCA (Right Common Carotid Artery Velocity)
- RT BIFURC (Right Carotid Bifurcation Velocity)
- RT ICA (Right Internal Carotid Artery Velocity)
- RT ICA/CCA (Right Internal Carotid Artery Velocity/Common Carotid Artery Velocity Ratio)
- LT ECA, LT CCA, LT BIFURC, LT ICA, LT ICA/CCA (same as above, for Left Carotid Artery)
- RT BULB (Right Bulbus Artery), RT VERT (Right Vertebral Artery), RT SUBC (Right Subclavian Artery), RT INN (Right Inn Artery)
- LT BULB, LT VERT, LT SUBC, LT INN
- Stent, pre-stent, post-stent
- A/B Ratio (Velocities Ratio)
- % Stenosis (Stenosis Ratio)
- S/D Ratio (Systolic Velocity/Diastolic Velocities Ratio)
- PI (Pulsatility Index)
- RI (Resistivity Index)
- HR (Heart Rate) – beats/minute
- UEV (Upper Extremity Vein velocities): IJV, SUBC, Axill V, BaSV, RV, UV, Ves, Pseudo, AVF, CephV
- UEA (Upper Extremity Artery velocities): Inn, SUBC, Axill, BA, RA, UA, Pseudo, AVF, Ves

- LEV (Lower Extremity Vein velocities): CFV, Saph FemJunc V, PopV, PTV, ATV, FV, GSV Calf, GSV Thigh, GSV Access, LSV, Saph PopJunc
- LEA (Lower Extremity Artery velocities): EIA, SFA, Pop, PTA, Peron, DPA, ATA,CFA, DFALEA
- MCA (Middle Cerebral Artery), ACA (Anterior Cerebral Artery), PCA (Posterior Cerebral Artery), AcomA (Anterior Communicating Artery), PComA (Posterior Communicating Artery), Basilar (Basilar Artery), Ves

Intima Media Thickness (IMT) Measurements

- Automatic measurements of carotid artery Intima-Media Thickness (IMT) on any acquired frame
- On-board IMT package facilitates non-interrupted workflow – fully integrated with M&A, worksheet, archiving and reporting functions
- Algorithm provides robust, quick, reliable measurements which can be stored to the on-board archive for review and reporting
- IMT measurement can be made from frozen images or images retrieved from archive
- IMT package supports measurements of different regions of the intima in the carotid vessel (e.g., Lt./Rt./CCA/ICA etc.)
- Frame for IMT measurement can be selected in relation to the ECG waveform

OB/GYN Application Module

- OB package for fetal growth analysis containing more than 100 biometry tables

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[8] *Michael D. Pettersen, MD; Wei Du, PhD; Mary Ellen Skeens, MS; and Richard A. Humes, MD; Detroit, Michigan; and Andover, Massachusetts. Regression Equations for Calculation of Z Scores of Cardiac Structures in a Large Cohort of Healthy Infants, Children, and Adolescents: An Echocardiographic Study. Journal of the American Society of Echocardiography Pettersen et al. 923 Volume 21 Number 8.*

C Kampmann, C M Wiethoff, A Wenzel, et. al. Normal *Values of M Mode Echocardiographic Measurements of More Than 2000 Healthy Infants and Children in Central Europe. Heart 2000; 83; 667-672.*

M Cantinotti, MD; M Scalese, MS; B Murzi, MD; et. al. Echocardiographic Nomograms for Chamber Diameters and Areas in Caucasian Children. Journal of American Society of Echocardiography December 2014; Volume 27, Issue 12; 1279-1292.e2.

M Cantinotti, MD; M Scalese, MS; B Murzi, MD; et. al. Echocardiographic Nomograms for Ventricular, Valvular and Arterial Dimensions in Caucasian Children with a Special Focus on Neonates, Infants and Toddlers. Journal of American Society of Echocardiography February 2014; Volume 27, Issue 2; 179-191.e2.

Lopez L et. al. Relationship of Echocardiographic Z Scores Adjusted for Body Surface Area to Age, Sex, Race, and Ethnicity. The Pediatric Heart Network Normal Echocardiogram Database. Circ Cardiovasc Imaging. 2017 ov; 10(11). pii: e006979. doi: 10.1161/CIRCIMAGING.117.006979.

BEI Xia, Pediatric Ultrasound Imaging. Beijing: People's Medical Publishing House, 2013 (Second Edition): 173-227 and 261-289.

- Dedicated OB/GYN reports
- Fetal graphical growth charts
- Growth percentiles
- Multi-gestational calculations (up to four)
- Programmable OB tables
- Expanded worksheets
- User-selectable fetal growth parameters based on European, American or Asian methods charts
- GYN package for ovary and uterus measurements and reporting

OB Measurements/Calculations

- Gestational age by:
  - GS (Gestational Sac)
  - CRL (Crown Rump Length)
  - FL (Femur Length)
  - BPD (Bi-Parietal Diameter)
  - AC (Abdominal Circumference)
  - HC (Head Circumference)
  - APTD x TTD (Anterior/Posterior Trunk Diameter by Transverse Trunk Diameter)
  - LV (Length of Vertebra)
  - FTA (Fetal Trunk Cross-sectional Area)
  - HL (Humerus Length)
  - BD (Binocular Distance)
  - FT (Foot Length)
  - OFD (Occipital Frontal Diameter)
  - TAD (Transverse Abdominal Diameter)
  - TCD (Transverse Cerebellum Diameter)
  - THD (Thorax Transverse Diameter)
  - TIB (Tibia Length)
  - ULNA (Ulna Length)
- Estimated Fetal Weight (EFW) by:
  - AC, BPD
  - AC, BPD, FL
  - AC, BPD, FL, HC
  - AC, FL
  - AC, FL, HC
  - AC, HC
  - EFBW
- Calculations and Ratios
  - FL/BPD

- FL/AC
- FL/HC
- HC/AC
- CI (Cephalic Index)
- AFI (Amniotic Fluid Index)
- CTAR (Cardio-Thoracic Area Ratio)
- Measurements/calculations by: ASUM, ASUM 2001, Berkowitz, Bertagnoli, Brenner, Campbell, CFEF, Chitty, Eik-Nes, Ericksen, Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Jeanty, JSUM, Kurtz, Mayden, Mercer, Merz, Moore, Nelson, Osaka University, Paris, Rempen, Robinson, Shepard, Shepard/Warsoff, Tokyo University, Tokyo/Shinozuka, Yarkoni
- Fetal graphical trending
- Growth percentiles
- Multi-gestational calculations (four)
- Fetal qualitative description (anatomical survey)
- Fetal environmental description (biophysical profile)
- Programmable OB tables
- Over 20 selectable OB calculations
- Expanded worksheets

GYN Measurements/Calculations

- Right ovary length, width, height
- Left ovary length, width, height
- Uterus length, width, height
- Cervix length, trace
- Ovarian volume
- ENDO (endometrial thickness)
- Ovarian RI
- Uterine RI
- Follicular measurements
- Summary reports

Abdominal Measurements/Calculations

- Splenic index
- Liver volume, mass, cyst
- Pancreas
- CBD
- GB wall, length
- Aorta prox, mid, dist
- Aorta iliac

- Spleen volume
- Bladder, post void bladder volume
- Renal
- Cortex thickness
- Mesenteric (CA, SMA, IMA)

Safety Conformance

Vivid *iq* is:

- The European Medical Device Regulation (MDR) 2017/745 (CE Marking) on Concerning Medical Device, Conforms to the following standards for safety:
- IEC 60601-1 Medical electrical equipment – Part 1: General Requirements for Basic Safety and Essential Performance
- IEC 60601-1-2 Medial electrical equipment – Part 1-2: General requirements for basic safety and essential performance –Collateral standard: Electromagnetic disturbances – Requirements and tests
- EMC Emissions Group 1 Class A device requirements as per CISPR 11
- IEC 60601-1-6 Medial electrical equipment – Part 1-6: General requirements for safety - Collateral Standard: Usability
- IEC 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
- ISO 10993-1 Biological evaluation of medical devices – Part 1: Evaluation and testing within a risk management process
- IEC 62366-1 Medical devices – application of usability engineering to medical devices
- IEC 62304 Medical device software – Software life cycle processes
- IEC 62359 Ultrasonic - Field characterization Test methods for the determination of thermal and mechanical indices related to medical diagnostic ultrasonic fields - Edition 2.1, 2017
- Directive 2011/65/EU on the restriction of use of certain hazardous substances

- Directive 2014/53/EU Radio Equipment (RED)
- According to Protection against electric shock in IEC/EN 60601-1 , Vivid iq is classified as Class I, with BF (probes) and CF (ECG leads) and Defibrillation-Proof Type (ICE catheters) applied parts according to IEC60601-1
- Commission Regulation (EU) No 207/2012 on electronic instructions for use of medical devices

Privacy & Security

Virus Protection

To reduce virus vulnerability, Vivid *iq* is configured with a minimal set of open ports and with all network services not actively used by the system closed down. This helps to reduce the risk of a virus attack on Vivid *iq*.

GE Healthcare is continuously judging the need for additional actions to reduce vulnerability of equipment; this includes vulnerability scanning of our products and evaluation of new security patches for the 3rd- party technology used. Microsoft® (and other) security patches that address serious issues with Vivid *iq* will be made available to customers after GE Healthcare verification of those patches.

Whitelisting

- Prevents non-listed applications from running
- To improve protection against potentially harmful software

User Policies

- Secure and advanced user password and login scheme according to user's password requirements

LDAP

- Users can log in to the system by using the same user credentials as used for domain connected computers

Disc Encryption

- Optional encryption of the scanner's E drive containing patient identifiable data

User Management

- Last login information
- Customer configurable login banner

Microsoft OS Patches

- OS vulnerability patches are distributed as part of regular SW maintenance releases during the life cycle of the product.

Service / Life cycle Offerings

Insite™ Express Connection (ExC)

- Enables Remote Service and Training
- Easy, flexible and secure connectivity configuration. The "Contact GE" on-screen button directly generates a real-time service request to the GE Healthcare online engineering or application specialist. It takes a snapshot (e.g., error logs, setup files) of the system at the time of the service request to enable analysis of problem before customer contact
- Virtual Console Observation (VCO) enables the customer to allow desktop screens to be viewed and controlled remotely over the encrypted tunnel to enable real-time training, device configuration
- Operation of Insite Express Connection is dependent on the infrastructure being available – check with your local GE Healthcare service representative
- File transfer enables the customer (bio-med or clinician) to directly transfer system information (e.g., system logs, images, parametric data) to GE Healthcare product engineering teams (no patient data transferred)

- Software reload provides remote application reconstruction and recovery capabilities in the event of system corruption

Smart Service Interface (SSI) (optional)

- A suite of GE Healthcare proprietary service tools, designed for expert Healthcare Technology Management Professionals who want to streamline troubleshooting and diagnostics on their GE Healthcare Vivid systems
- Provides an intelligent visual dashboard with drill-down capability to rapidly assess equipment status and health
- Can drive productivity by quickly isolating specific issues and decreasing overall system downtime
- SSI is available for licensed qualified users. Please contact your local sales representative for more information

eDelivery (optional)[9]

- eDelivery facilitates download of software patches for service purpose (e.g., security patches)
- It is also an enabler for the ability to download apps from the AppStore

Digital Expert (optional)[9]

- Enables the user to connect remotely to a GE Healthcare Clinical Specialist to receive application related training and help

Imaging Insights

- Support of Imaging Insights offering by providing system utilization data

Probe Check (optional)[10]

- Automated transducer element check and reporting of potential image quality impacts

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[9] *eDelivery and Digital Expert may not be available in all countries and regions. Consult with a GE Healthcare representative for more details.*

[10] *Probe Check is offered as a standard feature in USA in compliance with FDA requirements. It may be available in other regions. Consult with a GE Healthcare representative for more details.*

Transducers

Name	3Sc-RS	M5Sc-RS	6S-RS	12S-RS	6Tc-RS	6VT-D[*]
Catalog#	H45041DL	H44901AG	H45021RP	H44901AB	H45551ZE	H45581BJ
Description	Phased Array Transducer	XDclear™ Active Matrix Single Crystal Phased Array Transducer	Phased Array Transducer	Phased Array Transducer	TEE Transducer	Active Matrix 4D Volume TEE Transducer
Number of elements	64	240	96	96	64	2500
Foot Print	18 x 24 mm	18 x 27 mm	17 x 24 mm	13 x 18 mm	Tip(LxWxH) 45x14x12 mm	Tip(LxWxH) 45x14x13
Max. Bandwidth	1 - 5 MHz	1 - 5 MHz	2 - 7 MHz	4 - 12 MHz	3 - 8 MHz	3 - 8 MHz
Field of View	120°	120°	120°	90°	90°	90°
Depth of Field	30 cm	30 cm	30 cm	14 cm	30 cm	30 cm
Biopsy Guide Available	Multi-angle disposable with a reusable bracket	Multi-angle disposable with a reusable bracket	N/A	N/A	N/A	N/A
Application						
Fetal/Obstetrics	+	+	+			
Abdominal [1]	+	+	+	+		
Thoracic/Pleural	+	+	+	+		
Pediatric	+	+	+	+		
Small Organ[2]						
Neonatal Cephalic			+	+		
Adult Cephalic	+	+				
Cardiac[3]	+	+	+	+	+	+
Peripheral Vascular						
Musculo-skeletal Conventional						
Musculo-skeletal Superficial						
Urology[4]						
Transesophageal					+	+
Transvaginal						
Transrectal	+	+	+	+		
Intra-cardiac and Intra-luminal						
Intraoperative (Vascular)						
Interventional Guidance[5]	+	+				

Transducers

Name	10T-D	9T-RS	ML6-15-RS	9L-RS	12L-RS	L4-20t-RS
Catalog#	H44901AH	H45531YM	H40462LM	H40442LL	H40402LY	H48062AJ
Description	TEE Transducer	TEE Transducer	Active Matrix Wide Band Linear Array Transducer	Linear Array Transducer	Linear Array Transducer	XDclear Wide Band Linear Array Transducer
Number of elements	32	44	1008	192	192	256
Foot Print	Tip(LxWxH) 16x8x6	Tip(LxWxH) 35x11x8 mm	61 x 16 mm	14 x 53 mm	13 x 47 mm	12 x 49 mm
Max. Bandwidth	3 - 10 MHz	3 - 10 MHz	5 - 15 MHz	2 - 10 MHz	4 - 13 MHz	4 - 20 MHz
Field of View	90°	90°	50 mm	44 mm	38 mm	38°
Depth of Field	18 cm	14 cm	10 cm	16 cm	12 cm	9 cm
Biopsy Guide Available	N/A	N/A	Multi-angle, reusable bracket, disposable sleeve	Multi-angle disposable with a reusable bracket	Multi-angle disposable with a reusable bracket	Multi-angle disposable with a reusable bracket
Application						
Fetal/Obstetrics						
Abdominal [1]			+	+	+	+
Thoracic/Pleural			+	+	+	+
Pediatric			+	+	+	+
Small Organ[2]			+	+	+	+
Neonatal Cephalic			+	+	+	+
Adult Cephalic						
Cardiac[3]	+	+				
Peripheral Vascular			+	+	+	+
Musculo-skeletal Conventional			+	+	+	+
Musculo-skeletal Superficial			+	+	+	+
Urology[4]						
Transesophageal	+	+				
Transvaginal						
Transrectal						
Intra-cardiac and Intra-luminal						
Intraoperative (Vascular)						
Interventional Guidance[5]			+	+	+	+

Transducers

	4C-RS	C1-5-RS	8C-RS	P2D	E8Cs-RS	L8-18i-RS
Name	4C-RS	C1-5-RS	8C-RS	P2D	E8Cs-RS	L8-18i-RS
Catalog#	H4000SR	H40462LA	H40402LS	H45551CA	H48062AF	H40462LF
Description	Curved Array Transducer	Curved Array Transducer	Curved Array Transducer	Pencil Transducer	Endo Micro Convex Transducer	Intraoperative Linear Array Transducer
Number of elements	128	192	128	2	128	168
Foot Print	18 x 66 mm	17 x 69 mm	12 x 22 mm	16 mm	19 x 24 mm	11 x 35 mm
Max. Bandwidth	1 - 5 MHz	1 - 5 MHz	3 - 10 MHz	1 - 3 MHz	3 - 10 MHz	4 - 18 MHz
Field of View	58°	70°	131°	N/A	168°	25 mm
Depth of Field	33 cm	33cm	14 cm	N/A	14 cm	10 cm
Biopsy Guide Available	Multi-angle disposable with a reusable bracket	Multi-angle disposable with a reusable bracket	N/A	N/A	Single angle, disposable	N/A
Application						
Fetal/Obstetrics	+	+			+	
Abdominal [1]	+	+	+		+	
Thoracic/Pleural	+	+	+			+
Pediatric	+	+	+			
Small Organ[2]			+			+
Neonatal Cephalic			+			
Adult Cephalic						
Cardiac[3]			+	+		
Peripheral Vascular			+			+
Musculo-skeletal Conventional	+	+	+			+
Musculo-skeletal Superficial	+	+	+			+
Urology[4]	+	+			+	
Transesophageal						
Transvaginal					+	
Transrectal			+		+	
Intra-cardiac and Intra-luminal						
Intraoperative (Vascular)						+
Interventional Guidance[5]	+	+			+	

Transducers

Name	ICE Cord-RS	AcuNav8F**	AcuNav10F**	Sound Star 3D 10F**	Sound Star eco 10F**	Sound Star eco 8F**
Catalog#	H48952AR	Distributed by Biosence Webster, Inc.	Distributed by Biosence Webster, Inc.	Distributed by Biosence Webster, Inc.	Distributed by Biosence Webster, Inc.	Distributed by Biosence Webster, Inc.
Description	Connector Cable	Intra Cardiac Phased Array Catheter	Intra Cardiac Phased Array Catheter	Intra Cardiac Phased Array Catheter	Intra Cardiac Phased Array Catheter	Intra Cardiac Phased Array Catheter
Number of elements	N/A	64	64	64	64	64
Foot Print	N/A	8 Fr diameter	10 Fr diameter	10 Fr diameter	10 Fr diameter	8 Fr diameter
Max. Bandwidth	N/A	4 - 12 MHz	4 - 12 MHz	4 - 12 MHz	4 - 12 MHz	4 - 12 MHz
Field of View	N/A	90°	90°	90°	90°	90°
Depth of Field	N/A	16 cm	16 cm	16 cm	16 cm	16 cm
Biopsy Guide Available	N/A	N/A	N/A	N/A	N/A	N/A
Application						
Fetal/Obstetrics						
Abdominal [1]						
Thoracic/Pleural						
Pediatric						
Small Organ[2]						
Neonatal Cephalic						
Adult Cephalic						
Cardiac[3]						
Peripheral Vascular						
Musculo-skeletal Conventional						
Musculo-skeletal Superficial						
Urology[4]						
Transesophageal						
Transvaginal						
Transrectal						
Intra-cardiac and Intra-luminal		+	+	+	+	+
Intraoperative (Vascular)						
Interventional Guidance[5]						

[1] Abdominal including GYN

[2] Small Organ including breast, testes, thyroid

[3] Cardiac including Adult and Pediatric

[4] Urology including prostate

[5] Interventional Guidance including Biopsy

NOTE:

* *Working in 2D mode and bi-plan/tri-plane mode , but 4D mode is not available*

** *Not available in all countries. Please contact Biosense Webster, Inc. for availability.*

About GE Healthcare

GE Healthcare is a leading global medical technology and digital solutions innovator. GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, diagnostic pharmaceuticals, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world. Follow us on Facebook.com, LinkedIn.com, Twitter.com and Insights.com or visit our website www.gehealthcare.com for more information.

GE Healthcare

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U.S.A.

www.gehealthcare.com

Vivid iq premium Ultra Edition 2022

EMEA Product Tree

Release C

03/August/2022

Table of Contents

System Overview

Probes:

- M5Sc
- 3Sc-RS
- 6S-RS
- 12S-RS
- 9L-RS
- ML 6-15-RS
- L4-20t-RS
- 12L-RS
- L8-18i-RS
- C1-5-RS
- 4C-RS
- 8C-RS

Probes:

- E8Cs-RS
- 6VT-D
- 6Tc-RS
- 9T-RS
- 10T-D
- ICE cord RS
- P2D

Software Options:

- AI Auto Measure 2D
- AI Auto Measure Spectrum
- Advanced Q-Scan
- Smart Stress
- AFI 3.0
- Easy AFI LV
- AFI RV
- AFI LA
- AutoEF 3.0
- Easy AutoEF
- LVO Contrast
- Advanced Contrast (Low MI)
- Vascular Contrast
- Pre-Post-Compare
- Rodent
- GE DICOM Media Viewer
- ICE probe module
- CartoSound
- eDelivery

Hardware Options:

- USB Footswitch
- Secondary Battery
- Secondary Adapter
- Keyboard film
- EP Lab Accessories

ECG Options:

- ECG cable and adaptor

Connectivity Options:

- Streaming
- Tricefy Connect
- WIFI Adapter
- Ethernet protection cable

Printers:

- BW Printer Kit
- Color Printer
- Network Printer

Accesssories:

- Cart
- Charge Box
- Multiprobe Connector Box
- P2D holder
- Printer shelf
- DVDRW drive
- Wrist Rest
- Rolling bag
- TEE bag
- USB 3.0 Stick 32GB
- 1TB mobile USB HDD
- Biopsy kits
- TEE bite guards and protections
- TEE bite hole indicator

Base system

Item Number	Description	Description/Comments
H48932BC	Vivid iq premium Ultra Edition 2022	Must order a Power Cord and an ECG cable with every console
H48962BJED	Vivid iq v206 eDelivery	This option enables the ability to upload software modules to the ultrasound scanner. This HCAT is required to support eDelivery. Must be ordered with all console and upgrade kit orders in markets where eDelivery is supported.
H48982BJ	Vivid iq v206 physical SW USB	To be ordered with every system

Standard Features:

ATO/ASO

Speckle Reduction

Compound

Write Zoom

Virtual Apex

Virtual Convex

Card. Auto Doppler

TDI/TVI/TT

Biplane / Triplane on 6VT-D

Standard Features:

Q-Analysis

AMM

Curved anatomical M-mode

TEE support

Adv. Vascular (BFI/B-Flow)

LOGIQ View

IMT

Strain Elastography

Spline Tool

Standard Features:

Scan Assist

Scan Coach

Imaging Insights

Patient Archive

Report Package

Normal Values

ECG cable

DICOM Connectivity Package

USB connectivity

DICOM Media support

Manuals and Documentation

Manuals - Mandatory

HCAT	Description	Description/Comments
H48932BS	Vivid iq v206 e-manual kit	USB media containing the user manual in all languages

Manuals - Optional

HCAT	Description	Description/Comments
H48542LD	AIUM booklet	
H48932BN	Vivid iq v206 Adv. Ref. Man. English	
H48982BC	Vivid iq v206 Adv. Ref. Man. French	
H48932BP	Vivid iq v206 Basic Service Man.	
H48932BR	Vivid iq V206 English Docs kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BK	Vivid iq v206 French Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BL	Vivid iq v206 Spanish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BM	Vivid iq v206 German Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BN	Vivid iq v206 Italian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BP	Vivid iq v206 Dutch Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BS	Vivid iq v206 Estonian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BT	Vivid iq v206 Slovenian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48962BY	Vivid iq v206 Swedish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BA	Vivid iq v206 Russian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.

Manuals and Documentation

Manuals – Optional (continue)

HCAT	Description	Description/Comments
H48972BB	Vivid iq v206 Polish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BC	Vivid iq v206 Greek Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BD	Vivid iq v206 Hungarian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BE	Vivid iq v206 Slovakian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BF	Vivid iq v206 Czech Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BG	Vivid iq v206 Turkish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BH	Vivid iq v206 Danish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BJ	Vivid iq v206 Norwegian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BK	Vivid iq v206 Finnish Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BL	Vivid iq v206 Bulgarian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BM	Vivid iq v206 Romanian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BN	Vivid iq v206 Croatian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BP	Vivid iq v206 Lithuanian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BR	Vivid iq v206 Latvian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BS	Vivid iq v206 Serbian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BT	Vivid iq v206 European Portug. Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BW	Vivid iq v206 Ukranian Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48972BZ	Vivid iq v206 Kazakh Docs Kit	Paper user manual. Only order if paper manual is required at time of system delivery.
H48952AA	Vivid iq cart User Guide	Only order if Cart is ordered

Manuals and Documentation

Manuals – Optional (continue)

HCAT	Description	Description/Comments
H45531RA	TEE Probes User Manual Eng,Fre,Ger,Chi	Only if TEE probe is sold with the system
H45531RD	TEE Probes User Manual Italian	Only if TEE probe is sold with the system
H45531RE	TEE Probes User Manual Spanish	Only if TEE probe is sold with the system
H45581AN	TEE Probes User Manual Port, Europe	Only if TEE probe is sold with the system
H45531RJ	TEE Probes User Manual Swedish	Only if TEE probe is sold with the system
H45531RK	TEE Probes User Manual Norwegian	Only if TEE probe is sold with the system
H45531RL	TEE Probes User Manual Danish	Only if TEE probe is sold with the system
H45531RM	TEE Probes User Manual Polish	Only if TEE probe is sold with the system
H45531RN	TEE Probes User Manual Finnish	Only if TEE probe is sold with the system
H45531RP	TEE Probes User Manual Greek	Only if TEE probe is sold with the system
H45531RQ	TEE Probes User Manual Russian	Only if TEE probe is sold with the system
H45531RR	TEE Probes User Manual Dutch	Only if TEE probe is sold with the system
H45541PL	TEE Probes User Manual Hungarian	Only if TEE probe is sold with the system

Manuals and Documentation

Manuals – Optional (continue)

HCAT	Description	Description/Comments
H45541PM	TEE Probes User Manual Slovakian	Only if TEE probe is sold with the system
H45541PN	TEE Probes User Manual Romanian	Only if TEE probe is sold with the system
H45541PP	TEE Probes User Manual Czech	Only if TEE probe is sold with the system
H45541PQ	TEE Probes User Manual Latvian	Only if TEE probe is sold with the system
H45541PR	TEE Probes User Manual Lithuanian	Only if TEE probe is sold with the system
H45541PT	TEE Probes User Manual Estonian	Only if TEE probe is sold with the system
H45541PS	TEE Probes User Manual Turkish	Only if TEE probe is sold with the system
H45551ZQ	TEE Probes User Manual Serbian	Only if TEE probe is sold with the system
H45551ZR	TEE Probes User Manual Bulgarian	Only if TEE probe is sold with the system
H45561RH	TEE probes User manual Croatian	Only if TEE probe is sold with the system
H45581PT	TEE Probes User Manual Slovenian	Only if TEE probe is sold with the system
H45581PL	TEE Probes User Manual Ukraine	Only if TEE probe is sold with the system

Keyboards

Keyboards and Key Cap Language Kits

HCAT	Description	Description/Comments
H48952AT	Vivid iq KBD Film	

Power cords and Destination Sets

Mandatory

HCAT	Description	Description/Comments
H48502AW	AC Power Cord Europe	
H48532AY	AC Power Cord Denmark Hospital	
H48502AZ	AC Power Cord Israel	
H48512AF	AC Power Cord UK/Ireland	
H48512AJ	AC Power Cord Switzerland	
H48512AG	AC Power Cord India/South Africa	

Optional

HCAT	Description	Description/Comments

Probes

HCAT	Description	Description/Comments
2D Sector Phased Array XDClear		
H44901AG	M5Sc-RS	
2D Sector Phased Array		
H45041DL	3SC-RS	
H45021RP	6S-RS	
H44901AB	12S-RS	
2D Linear Array XDClear		
H48062AJ	L4-20t-RS	
2D Linear Array		
H40442LL	9L-RS	
H40462LM	ML6-15-RS	
H40402LY	12L-RS	
H40462LF	L8-18i-RS	Intraoperative linear probe
2D Curved Array		
H40462LA	C1-5-RS	
H4000SR	4C-RS	
H40402LS	8C-RS	

Probes (continue)

HCAT	Description	Description/Comments
2D Endocavity		
H48062AF	E8Cs-RS	
Special probes		
H48952AR	ICE-cord-RS w. Ferrite filter	<mark>ICE Probe Interface Module H48942AP is required</mark> Doesn't include ICE catheter, customer needs to order seperately from Biosense Webster
Doppler pencil probes		
H45551CA	P2D KE100005 CW Pencil Probe	

TEE Probes

HCAT	Description	Description/Comments
TEE adult probes		
H45581BJ	6VT-D	<mark>Requires cart H48722AM and multi probe port box H48722AN</mark> Operates in multiplane and biplane / triplane only. No 4D imaging.
H45551ZE	6Tc-RS	
TEE pediatric probes		
H45531YM	9T-RS	
H44901AH	10T-D	<mark>Requires cart H48722AM and multi probe port box H48722AN</mark>

TEE accessories

HCAT	Description	Description/Comments
H45511EE	TEE Clip-On Bite Guard Adult	Supporting adult TEE investigation used for patients under general anaesthesia during surgery.
H45521CB	TEE Clip-On Bite Guard Adult OR	Supporting adult TEE investigation used for patients under general anaesthesia during surgery.
H45521JH	TEE Conventional Bite Guard Adult	Conventional Bite Guard supporting adult TEE investigation.
H45521CK	Adult TEE Scanhead Protection Cover	Cover scanhead for protection during transportation
H45521JG	TEE Conventional Bite Guard Pediatric	Conventional Bite Guard supporting adult TEE investigation.
H45541RN	Pediatric TEE Scanhead Protection Cover	Supporting adult TEE investigation used for patients under general anaesthesia during surgery.
H45551NM	TEE Storage Rack	For storage of Adult and Pediatric TEE probes, wall mounted unit. Store disinfected probes, ready for the next use.
H45531HS	Bite Hole Indicator	
H48942AS	TEE Bag	

Biopsy Guides

HCAT	Description	Description/Comments
Biopsy Options 2D Sector Phased Array		
H45561FC	M5S Biopsy Kit	
H46222LC	3Sc-RS Biopsy Starter Kit (multi angle)	Civco Part # 742-370
Biopsy Options 2D Linear Array		
H40432LC	12L-RS Biopsy Starter Kit	Civco Part # 742-335
H4906BK	9L BIO GUIDE STARTER KIT	
H40432LJ	ML6-15 Biopsy Starter Kit	
H45201BLF	L4-20t Verza biopsy starter kit	
Biopsy Options 2D Curved Array		
E8385NA	4C-RS Biopsy Kit	Civco Part # 741-323
H40432LE	C1-5 Biopsy Starter Kit	
Biopsy Options 2D Endocavity		
E8385MJ	E8Cs-RS Biopsy Kit	Civco Part # 742-270

Software

HCAT	Description	OAC	Description/Comments
H48912AS	Advanced Qscan (TSI, SI, SRI)	X	
H48922AB	Smart Stress	X	
H45601YX	AI Auto Measure – 2D	X	
H45601YY	AI Auto Measure - Spectrum Recognition	X	
H48572BR	Auto EF 3.0	X	
H48082BK	Easy Auto EF	X	Requires H48572BR, Auto EF 3.0
H48572BP	AFI 3.0	X	
H48082BL	Easy AFI LV	X	Requires H48572BP, AFI 3.0
H45601TT	AFI RV	X	
H45601TU	AFI LA	X	
H48912AY	LVO Contrast	X	
H48932BL	Advanced Contrast (Low MI)	X	On M5Sc, not on 3Sc
H48932BM	Vascular Contrast	X	
H48932BK	Pre-Post Compare	X	
H48942AP	ICE Probe Interface Module	X	Catheter connection cable H48952AR needs to be ordered seperately to use ICE an/or cartosound catheters
H48942AR	CartoSound interface	X	Contains software option key only. H48982AN video converter must be ordered in addition When ordering a Cartosound interface, the ICECord-RS W. Ferrite filter H48952AR and the ICE Probe Interface Module H48942AP must be installed or need to be ordered.
H48532BS	GE DICOM viewer on media	X	

Hardware Options

HCAT	Description	Description/Comments
H48722AM	Vivid iq generic cart	Must order a Power Cord with every cart and H48952AA (cart user manual). The cart comes with 3 baskets (front, back, base back), 2x3 Probe Holders, 4 Cable Hooks, 2 Gel holders, 3 USB connectors
H48722AN	Vivid iq multi probe port box	Requires cart H48722AM
H48722AR	Charge box w. 3 batteries	Requires cart H48722AM
H48942AT	Vivid Compact Battery	Secondary battery. One battery comes standard with every scanner
H48982AW	Vivid iq Adapter	Secondary power adapter. One power adapter comes standard with every scanner. Must order a Power Cord with every adapter!
H41642LS	Footswitch MKF 2-MED USB GP26	
H48942AY	P2D holder	Requires cart H48722AM
H48982AN	Isolated HDMI converter/splitter	Seperate power cord needs to be ordered
H48572AB	HDMI to s-video adaptor	
H48532LJ	DVDRW drive	LITEON eUAU108 DVDRW
H48072BT	EP Lab Accessory Kit for Vivid iq	ICE Probe Interface Module H48942AP must be installed or need to be ordered

ECG and Connectivity

HCAT	Description	OAC	Description/Comments
ECG Options			
H48552BR	ECG adapter cable		Required to use common Vivid ECG cable on Vivid iq
H45601SD	ECG cable, adult, IEC		<mark>Requires H48552BR ECG adapter cable.</mark> Cable only, requires lead set.
H45601SE	ECG lead set, adult, IEC		Used together with H45601SD
H45601SG	ECG cable, neo, IEC		<mark>Requires H48552BR ECG adapter cable.</mark> 3.6 m. Used together with neonatal leads H45601SJ
H45571RK	Lead/electr neo IEC 600		
H45601SK	Adapter, ECG 3-lead		ECG Cable Adapter, Multi-link 3-lead DIN adapter Adapter can be used with adult ECG cables H45601SD and neonatal ECG leads/electrodes H45571RK.
H48972AG	External ECG Cable		Set of various cables and connectors to enable connection of ECG from stress treadmills and ECG monitors to our Vivid scanner
Connectivity Options			
H45061GW	Tricefy connectivity	X	
H45601GJ	Streaming	X	
H48392AW	Wireless USB Adapter		Wi-Fi USB adapter Netgear A6210
H43272LJ	Ethernet protection cable		

Printer and Other Peripherals

HCAT	Description	Description/Comments
Printers		
H48492AG	Sony UP-D898MD BW Printer kit EU	The printer kit contains the printer, the power cord and a USB cable
H48942AW	BW Printer shelf	<mark>Requires cart H48722AM</mark>
H48552LA	Sony UPD25 Printer Kit Europe	The printer kit contains the UPD 25 color video printer, the power cord and a USB cable
H45541MJ	Color Laser Printer 220V	HP Laserjet Pro 400 - M451dn
H45541MH	Color Laser Printer 110V	HP Laserjet Pro 400 - M451dn
Printer Paper		
Peripherals/Accessories		
H48532BH	USB 3.0 Drive 32GB	
H48492AB	1TB mobile USB HDD	
H48592BY	Ergonomic Wrist Rest	
H48942AN	Rolling bag	
H48072BM	Vivid iq Inclined Supporter	Please order this accessory with systems ordered without a cart. You can also order one with a cart if you need an extra bracket.

VNAV

Not available

Upgrades

HCAT	Description	Description/Comments
H48942BA	Vivid iq **v204** to v206 upgrade kit **Hard- and Software**	This kit is not compatible with Vivid iq R1, R2 and R3. Includes new DCDC, new MST board and software. Required if **old** MST board is installed. Check in config tab on the system under Utility-> Config.->About-> HW version. The Global Part Number (GPN) for the **old** MST board that is shown is 5771693. The part# is shown under **BF / COMXP / GFW**. All the same part# as these 3 components are the assemblies of the MST. H48962BJED (eDelivery) must be ordered with the upgrade if eDelivery is released in the country
H48942BB	Vivid iq **v204** to v206 upgrade kit **Software only**	This kit is not compatible with Vivid iq R1, R2 and R3. Required if **new** MST board is installed. Check in config tab on the system under Utility-> Config.->About-> HW version. The Global Part Number (GPN) for the **new** MST board that is shown is 5816033-2. The part# is shown under **BF / COMXP / GFW**. All the same part# as these 3 components are the assemblies of the MST. H48962BJED (eDelivery) must be ordered with the upgrade if eDelivery is released in the country
H48982BK	Vivid iq v**203** to v206 upgrade kit	Upgrades Vivid iq v203 to Vivid iq v206. Not compatible with R1 or R2 systems. This SW and HW upgrade kit includes software, new trackpad, new CPU, DCDC and new 5828 MST board.
H48912AJ	Vivid iq 4D Upgrade	Upgrades Vivid iq premium to Vivid iq 4D

Veterinary Use

HCAT	Description	OAC	Description/Comments
	For vet use please continue using Vivid iq 204 version		

Revision History

Revision	Date	Author	Description/Comments
Draft	June 22, 2022	Christian Berger	Initial Release
Rev. A	July 13, 2022	Christian Berger	
Rev. B	July 27, 2022	Christian Berger	Removed vet options due to MDR regulatory
Rev. C	August 03, 2022	Christian Berger	Removed requirements cart and multiprobe box from H45531YM, 9T-RS

Appendix A

YOUR PATIENTS RELY ON **YOU**.

YOU CAN RELY ON **US**.

Vivid™

Clinical Applications

ULTRA EDITION

gehealthcare.com

VIVID CLINICAL
APPLICATIONS

A wide range of clinical applications for use in Core Echo Lab, Interventional, Pediatrics and even beyond cardiology.

The Ultra Edition[1] applications highlighted **in bold are referent to our latest release.**

VISUALIZATION
	Ultra Edition
HD*live*™	**Dual Crop**
	FlexiLight
	HD Color

FLOW QUANTIFICATION
	Ultra Edition
Cardiac Auto Doppler [AI]	AI Auto Measure Spectrum Recognition [AI]
	BSI

CHAMBER QUANTIFICATION
	Ultra Edition
4D Auto LAQ	**Easy AutoEF** [AI]
4D Auto RVQ	AI Auto Measure 2D [AI]
4D Auto LVQ	

NAVIGATION
	Ultra Edition
4D Markers	**CT Fusion Live**
FlexiViews	**Pre-Post Compare**
View-X	**FlexiSlice Extend**
	Scan Coach

VALVE QUANTIFICATION
	Ultra Edition
4D Auto AVQ	4D Auto TVQ
4D Auto MVQ	

AFI FUNCTIONAL IMAGING
	Ultra Edition
AFI Stress	**Easy AFI LV** [AI]
MyoCardial Work	AFI RV
	AFI LA

VISUALIZATION

WHY GUESS WHEN YOU CAN SEE.
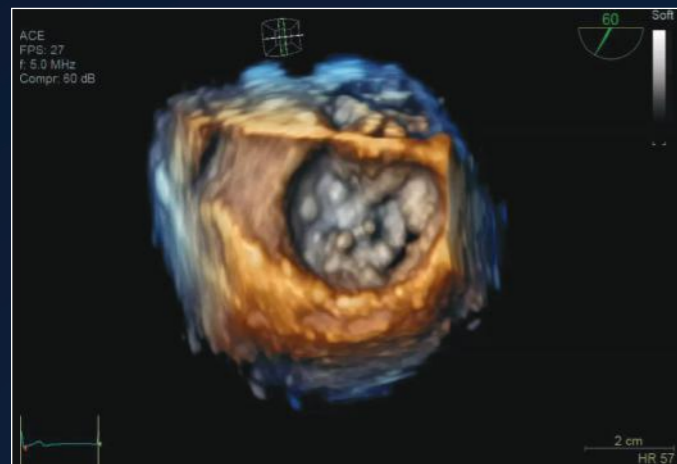
HD*live*™

Simulates light propagation and scattering through tissue

Provides enhanced visualization of anatomical structures.

ULTRA EDITION
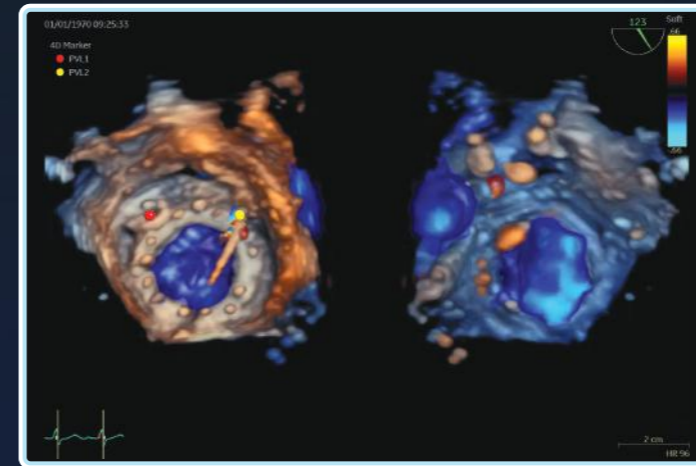
Dual Crop

Visualizes a structure, such as a valve or device, from two opposing directions

Fast and efficient visualization of complex structures from both sides simultaneously, enhancing clinical assessment of valve anomalies or device deployment.
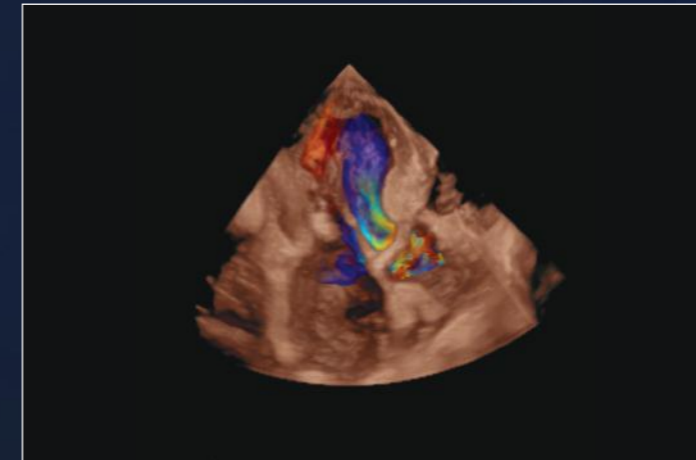
HD Color

4D color flow rendering technique for semi-transparent visualization of origin and size of high velocity jets

Enhance spatial relationships between flow and surrounding structures; suppress non-diagnostic low flow information.
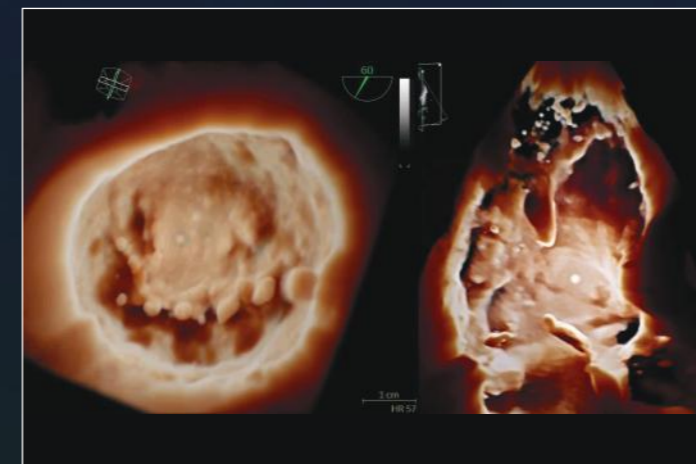
FlexiLight

Rendering technique for photo-realistic light-source based illumination of heart structures

Comprehensive visualization of leaflets, trabeculae, regurgitant orifices, clefts, aneurisms, and thrombi.

NAVIGATION

WHY GUESS WHEN YOU CAN SEE.

View-X

See X-ray from fluro in real time on ultrasound screen as a picture in picture

Facilitates communication between team members during procedures.
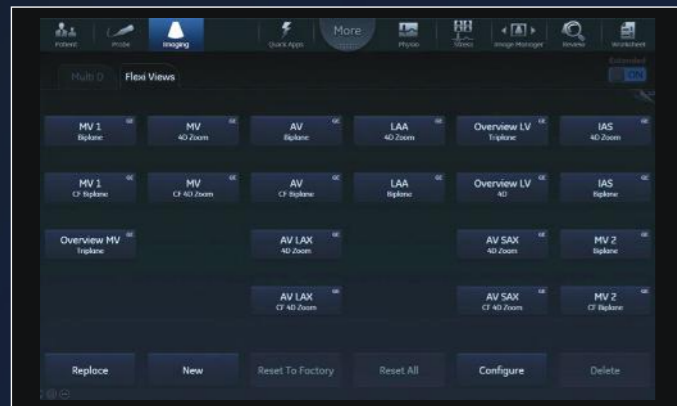
FlexiViews

Quick access to predefined 4D/multiplane views during live mode

Potentially reduce scan time during complex interventional procedures.
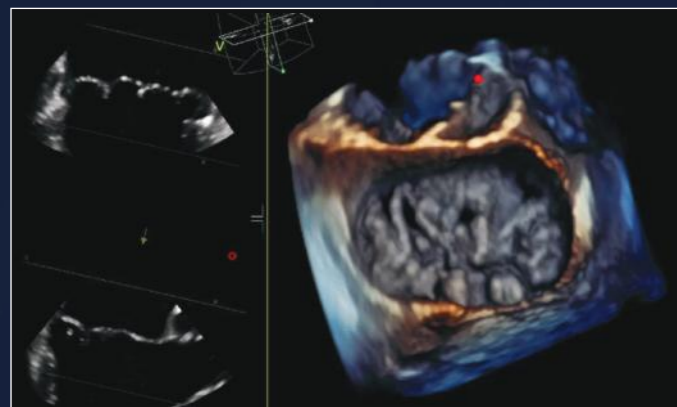
4D Markers

Annotations viewable from all angles on 4D ultrasound volume data set and 2D views

Enhance communication in echo lab, cath lab, and OR

ULTRA EDITION
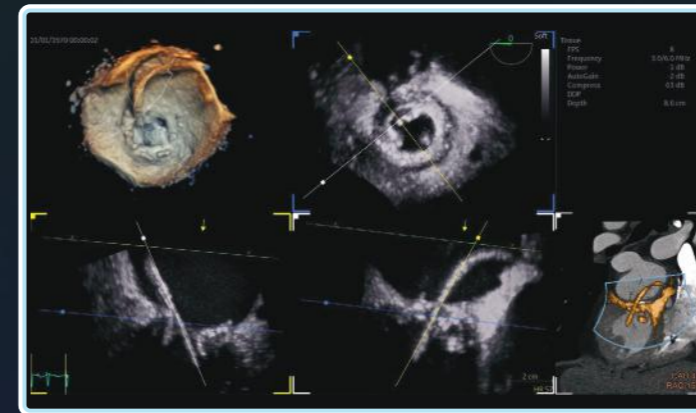
CT Fusion Live

Fuse CT and 4D ultrasound data in both live and replay

Extend field-of-view for better understanding of heart anatomy during interventional planning and procedures
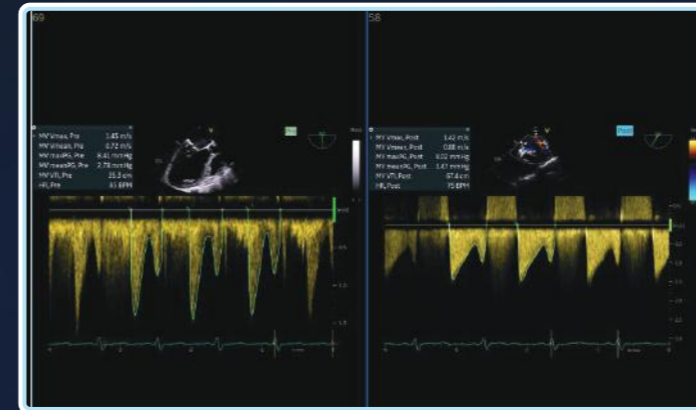
Pre-Post Compare

Label measurements and images acquired in different stages of an exam or procedure, to compare pre & post procedure

Obtain a clear record of performance in different stages within a procedure, helping to quantify impact and verify effective deployment of implanted devices.

FlexiSlice Extend

Ability to rotate the view direction of the volume rendering independently of slice orientations

Increases flexibility of FlexiViews, improving clinical workflow efficiency and easier to see details of structures of the volume rendering.
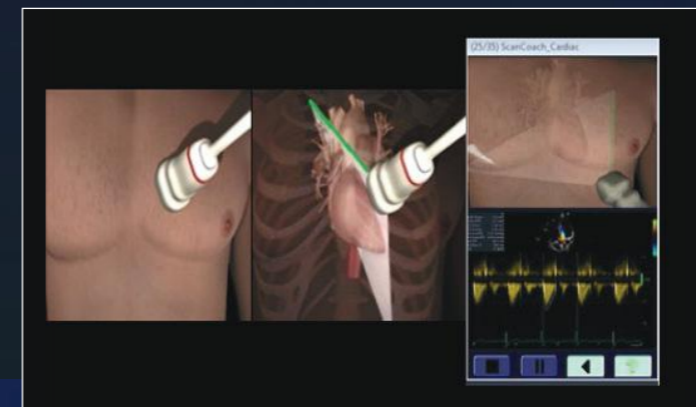
Scan Coach

Provides modules depicting basic scanning techniques with animated graphics and reference clinical images

Helps inexperienced users performing echo scans, and assists in positioning the probe and orientation.

FLOW QUANTIFICATION

YOUR TIME IS PRECIOUS. SAVE IT.

AI Auto Measure Spectrum Recognition

Semi-automatic selection of appropriate spectral Doppler measurements

Fewer manual interactions, enhancing reproducibility of follow-up studies, and supporting less experienced users.
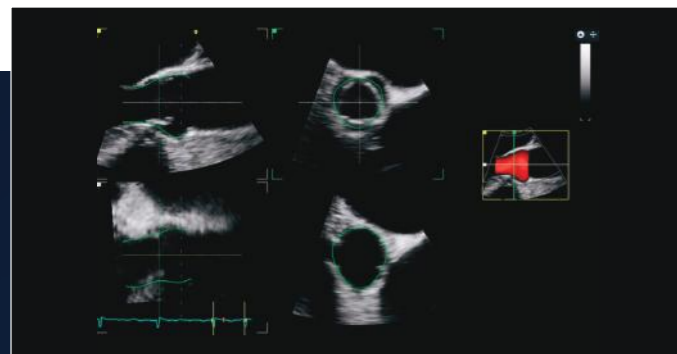

Cardiac Auto Doppler

Semi-automated Cardiac Doppler measurements

Enhances reproducibility of follow-up studies, offers Doppler measurement in multiple cardiac cycles, supporting less experienced users.
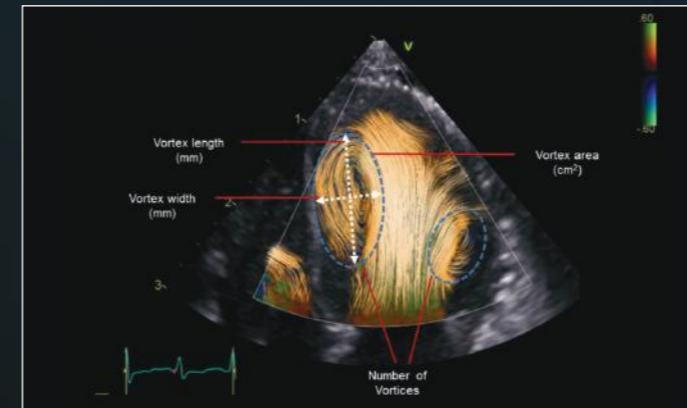
Blood Speckle Imaging 2.0

Insights into complex blood flow patterns such as vortex formation and duration

Provides multiple modes for visualizing blood flows, and complimentary information for assessment of dilated cardiomyopathy and heart failure.

VALVE QUANTIFICATION

PRECISION AT THE HEART OF QUANTIFICATION

4D Auto TVQ

Semi-automated 4D tool enables fast visualization and quantification of the tricuspid valve anatomy

Cost effective alternative to traditional tricuspid annulus assessment; handles 3D shape of tricuspid valve and provides 15 static and dynamic measurements.

4D Auto AVQ

Semi-automated 4D tool enables fast quantification of aortic valve

Automatically segment, align, and quantify the aortic outflow tract.
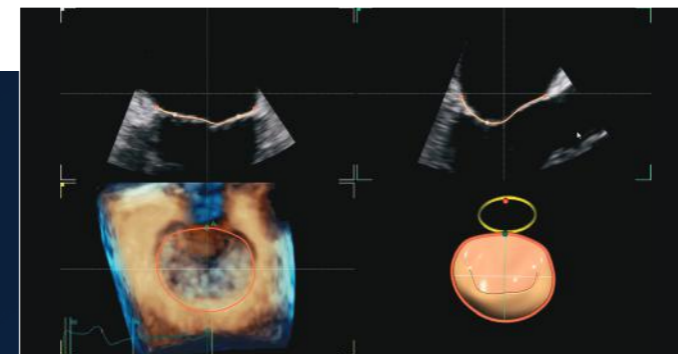
4D Auto MVQ

Mitral Valve quantification tool derived from volume ultrasound data

Helps visualize and quantify mitral valve via a semi-automatic surface detecting algorithm.

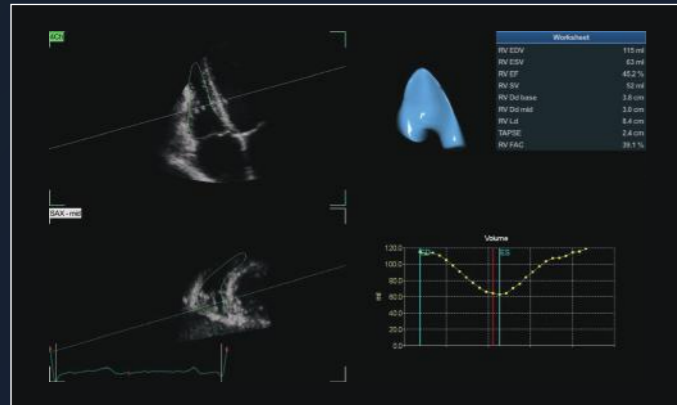# CHAMBER QUANTIFICATION

PRECISION AT THE HEART OF QUANTIFICATION.
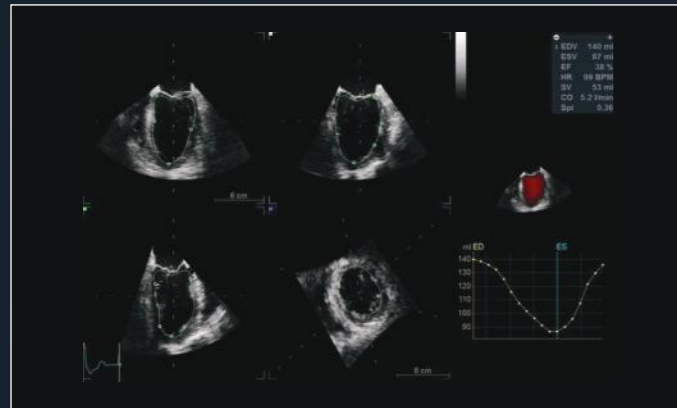
4D Auto LVQ

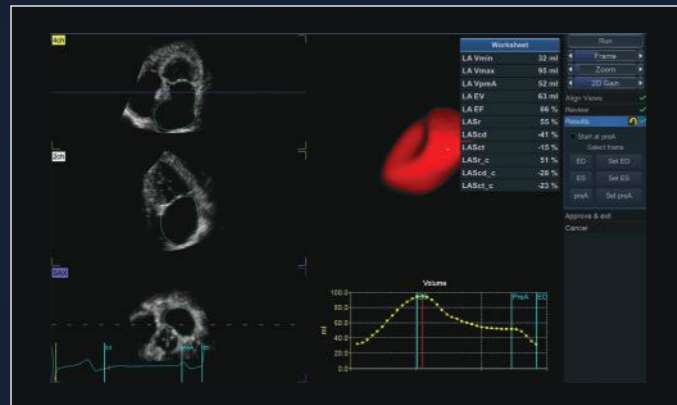**Semi-automatic quantification of left ventricle**

Fast, easy, two-click method to define initial endocardial border.

4D Auto RVQ

Semi-automatic quantification of the right ventricle
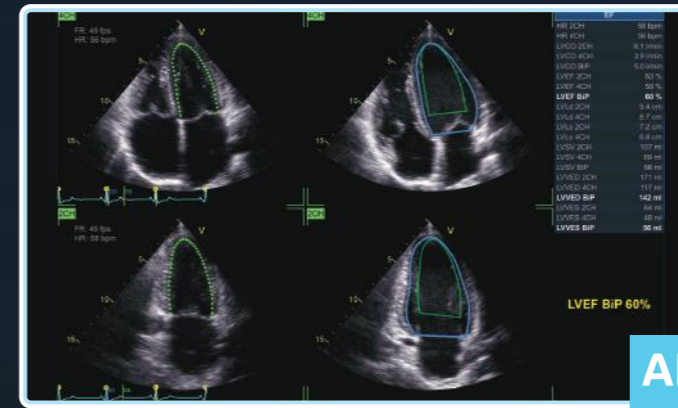
Helps visualize and quantify the right ventricle.

4D Auto LAQ

Semi-automatic quantification of left atrium

Fast, reproducible, and accurate left atrial volumes, ejection fraction, global longitudinal and circumferential strain.

ULTRA EDITION

Easy AutoEF

Automated one-click ejection fraction measurement

Our AI-based Auto ROI detection algorithm allows users to complete ejection fraction, with no manual interaction apart from initiating the tool and approving the results.
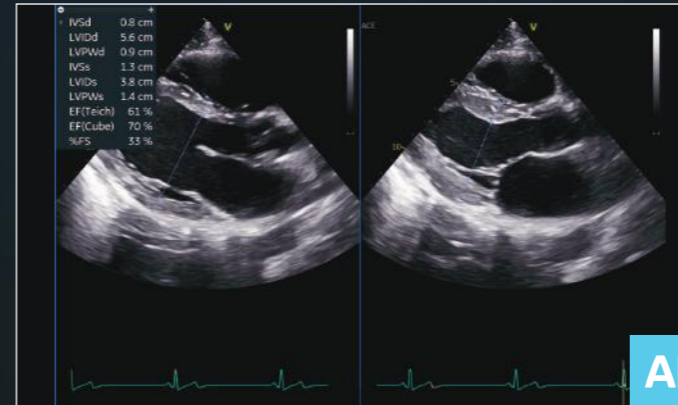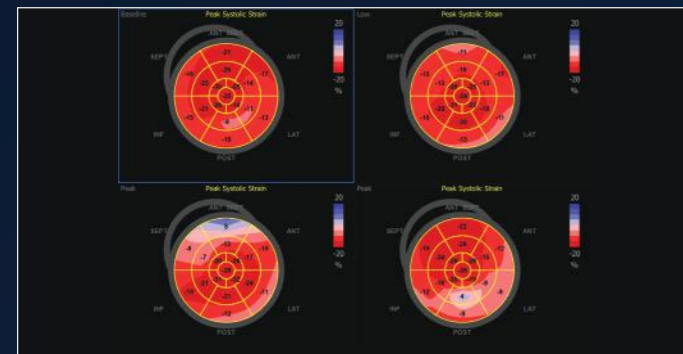

AI Auto Measure 2D

Semi-automated LV dimension measurements in parasternal long axis view

Fast measurements of LV dimensions, up to 80% fewer clicks, reducing manual workflow during analysis of cardiac images.
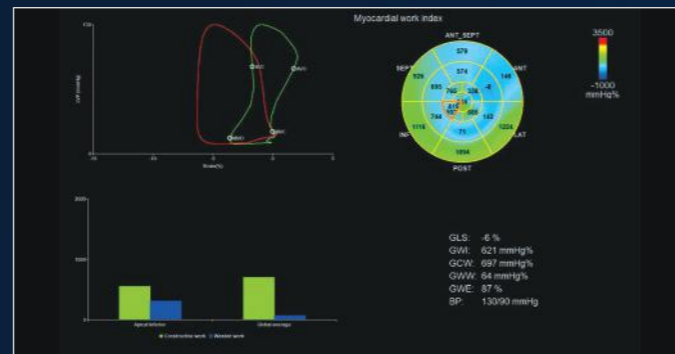
AFI FUNCTIONAL IMAGING

FROM DIAGNOSIS TO PROGNOSIS.

ULTRA EDITION

Easy AFI LV

Automated one-click AFI LV analysis

Our AI-based global and segmental strain measurements require no manual interaction apart from initiating the tool and approving the results. Additionally, you will be able to view EF measurements.

AFI LA

Assess left atrial function by advanced speckle tracking echocardiography

Supports left atrium strain, volumes, and emptying faction measurements.

AFI RV

Assess right ventricular function by advanced speckle tracking echocardiography

Supports right ventricle free wall strain, global strain, and TAPSE.

AFI Stress

Quantify wall motion at all stress levels

Quantify longitudinal segmental and global strain for contractility assessment at each stress level.
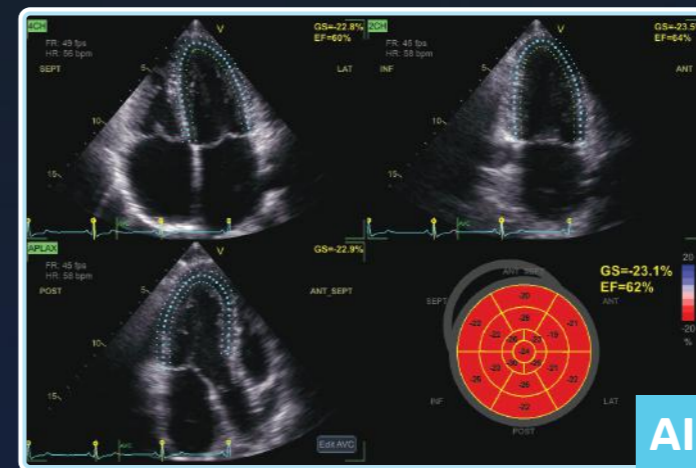
MyoCardialWork

Strain tool accounts for systolic blood pressure MV and AV opening and closure times

May provide more accurate and reproducible results based on new and reduced load dependent parameters.
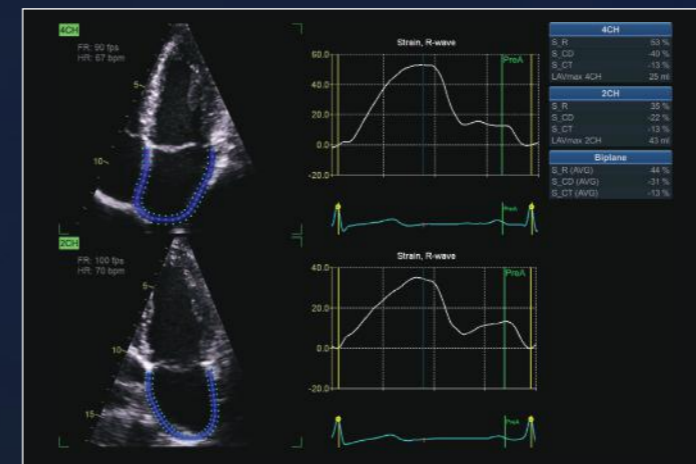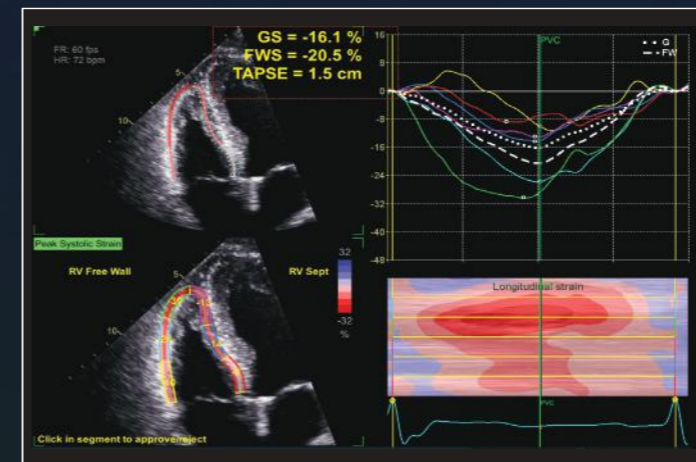
VIVID CLINICAL APPLICATIONS

VISUALIZATION	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
CT Fusion	●				●
HDlive™	●	●			●
HD Color	●	●		●	●
Dual Crop	●	●		●	●
FlexiLight	●				●

NAVIGATION	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
CT Fusion Live	●				
Flexislice Extend	●	●		●	●
Pre-Post Compare	●	●	●	●	●
4D Markers	●	●		●	●
FlexiViews	●	●		●	
View-X	●	●		●	
LVO contrast	●	●	●	●	
Scan Coach			●	●	

AFI FUNCTIONAL IMAGING	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
Easy AFI LV `AI`	●	●	●	●	●
AFI RV	●	●	●	●	●
AFI LA	●	●	●	●	●
MyoCardial Work	●				●
AFI Stress	●	●			●

CHAMBER QUANTIFICATION	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
Easy AutoEF `AI`	●	●	●	●	●
AI Auto Measure 2D `AI`	●	●	●	●	●
4D Auto LAQ	●				●
4D Auto RVQ	●	●			●
4D Auto LVQ	●			●	●

VALVE QUANTIFICATION	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
4D Auto TVQ	●				●
4D Auto AVQ	●			●	●
4D Auto MVQ	●			●	●

FLOW QUANTIFICATION	Vivid E series	Vivid S series	Vivid T series	Vivid iq	EchoPAC™
AI Auto Measure Spectrum Recognition `AI`	●	●	●	●	●
Blood Speckle Imaging 2.0	●				
Cardiac Auto Doppler `AI`	●	●	●	●	●

About GE Healthcare:

GE Healthcare is the $18 billion healthcare business of GE (NYSE: GE). As a leading global medical technology and digital solutions innovator, GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world.

Follow us on Facebook, LinkedIn, Twitter, and Insights for the latest news, or visit our website www.gehealthcare.com for more information.

References:

1. Ultra Edition is not a product name. The cont'ent herein refers to the 2022 release of the Vivid portfolio.

JB20937XX