

GE Healthcare

Voluson™ E10 BT21

Data Sheet

Product description

The Voluson* E10 BT21 is an advanced imaging platform that combines extraordinary image quality with our superb volume ultrasound technology.

Highlights

- High Resolution 23" LCD LED or 22" OLED Monitor
- Radiance System Architecture
- Radiantflow
- SlowflowHD and Slowflow3D
- HDlive* Technology
- Advanced VCI with OmniView
- Uterine Trace
- Advanced STIC & eSTIC
- Advanced Fetal Echo
- fetalHQ
- Scan Assistant
- Automation Technology with SonoCNS, SonoBiometry, SonoNT, SonoIT
- XDclear Probes
- Volume Matrix Technology
- High Frequency Transvaginal Imaging
- Electronic 4D Technology
- 3D Printing Capabilities



General Specifications

Dimensions and weight	
Height (minimum)	1330 mm (52.4 in)
Height (maximum)	1670 mm (65.7 in)
Adjustable	with electrical motor
Width	580 mm (22.8 in)
Depth	940 mm (37.0 in)
Weight (no Peripherals)	147 kg (324.1 lbs.)

Power supply	
Voltage	100 – 240 VAC
Frequency	50/60 Hz (+/-1%)
Power	Max. 800 VA Including all options typical power consumption ~350VA without peripherals
Thermal Output	max. 2730 BTU/h

Console design	
4 Active Universal Pinless Imaging Probe Ports	
Integrated HDD	2 TB (optional 1TB SSD)
Integrated SSD	64 GB
Operating System: Windows** 10 IoT Enterprise 2019 LTSC	
Integrated DVD+R(W)/CD-R(W) drive	
On-board storage for Peripherals	
Wheels	Wheel diameter 150 mm
Integrated cable management	
Front and rear handles	
Probe port illumination	

User Interface

Operator keyboard	
Floating Keyboard:	
- Rotation: adjustable +/- 38° from center - Height adjustable + 195 mm (7.9")	
Full-sized, backlit alphanumeric keyboard	
Ergonomic hard key layout	
Interactive backlighting	
Integrated recording keys for remote control of up to 6 peripherals or DICOM® devices, one dedicated DVD recording key	

Touch screen	
12.1" high resolution color LCD screen	
Multi touch interactive dynamic software menu	
Brightness adjustable	
xTouch capable, supporting Volume rotation, MagiCut, HD <i>live</i> light source manipulation and OmniView	
Capable to display 2D/3D/4D Ultrasound Images in real time	

Monitor	
23" high resolution LCD LED Display with DVI interface	
Optional 22" OLED Display	
Resolution Full HD 1920 x 1080 pixel	
Display brightness up to 300 cd/m ² (OLED: 205 cd/m ²)	
Tilt/Rotate Adjustable Monitor	
Tilt angle: min. +30°/-75°	
Horizontal rotate angle: +/- 90°	
Digital brightness and contrast adjustment. Five default settings available: Extra Dark, Dark-, Semi Dark-, Light-, Extra Light Room, each for higher and lower color temperature	

System Overview

Exam types	
Abdominal	
Obstetrical and Fetal Echo	
Gynecological	
Small Parts and Breast	
Vascular	
Pediatrics	
Transrectal	
Cardiology	
Cephalic	
Musculoskeletal (MSK)	

Operating modes	
Brightness Mode (B-Mode) (2D)	
Bi-Plane Mode, including steering of orthogonal plane	
Motion Mode – M-Mode (conventional M-Mode)	
Anatomical M-Mode (AMM)	
Pulsed Wave Doppler (PW) with automatic HPRF	
Continuous Wave Doppler imaging (CW)	
Color Flow Doppler mode (CFM)	
Power Doppler Mode (PD)	
High Definition Power Doppler (HD-Flow*)	
SlowflowHD & Slowflow3D	
Tissue Doppler Mode (TD) and PW-Tissue Doppler Mode B-Flow* (BF)	
Compression & Shear Wave Elastography (not available in all countries)	
Contrast Imaging Mode†, including Quantification Capabilities	
Combination modes: M/CFM, M/HD-Flow, M/TD, PW/CFM, PW/HD-Flow, PW/PD, PW/TD	
Extended View (XTD View)	
Volume Mode (3D/4D):	
3D Static 4D Real Time - VCI-A - VCI-OmniView - Spatio-Temporal Image Correlation (STIC) & eSTIC 4D Biopsy	

Scanning methods	
Electronic Sector/Convex/Linear	
Mechanic/Electronic Volume Sweep	

User Management and Logging Functionality	
Multiple Users with individual log on credentials	
Different and adjustable access levels	
LDAP Interface	
Enhanced Audit Trail and Usage Log	

Privacy and Security Functionality	
Hard disc AES Encryption with 256-bit length	
Whitelisting	
Encrypted DICOM Communication Capability (TLS)	
Encryption and Data Anonymization Export Capability	
All ports, services and shared resources that are not required for the intended use are disabled	
Operating System Access disabled	
Deactivation of USB ports possible	

Transducer types	
Convex Array	
Microconvex Array	
Linear Array	
Active Matrix Phased Array (1.5D)	
Active Matrix Linear Array (1.5D)	
Volume probes 4D:	
• Convex Array • Microconvex Array • Linear Array • Active Matrix Convex Array (1.5, 2D)	
System standard features	
Innovative user interface with high resolution 12.1" LCD touch panel	
B-Mode	
M-Mode	
PW-Doppler	
CFM (Color Flow Doppler Mode)	
Automatic Optimization (B-Mode, PW Doppler)	
Auto TGC	
AutoScale (PW Doppler and Color Doppler PRF)	
Coded Harmonic Imaging with Pulse Inversion Technology, operating on multiple frequencies, with user selectable on/off button	
Coded Excitation (CE)	
HD-Flow & Power Doppler Mode	
Radiant <i>flow</i> & Slow <i>flow</i> HD & Slow <i>flow</i> 3D	
B-Flow	
Tissue Doppler and PW-Tissue Doppler	
XTD	
SRI II (Speckle Reduction Imaging)	
HD <i>live</i> Silhouette, HD <i>live</i> Studio	
HD <i>live</i> Flow, HD <i>live</i> Flow Silhouette	
CrossXBeamCRI* (Compound Resolution Imaging)	
SonoBiometry (HC, BPD, AC, FL, HL, SonoNT & SonoIT)	
SonoCNS	
SonoRender <i>live</i>	
Scan Assistant:	
• Includes measurements, annotations and fetal anatomy and gynecology worksheet entries • Performs predefined mode changes, preset selection and screen layout changes • Supports display of user selected reference images • Standardize image sequence upon DICOM transfer	
DICOM 3.0 Connectivity	
Static 3D Mode:	
• B Mode only • B + Power Doppler Mode • B + CFM Doppler Mode • B + HD-Flow Mode • B + Slow<i>flow</i>HD Mode • B + B-Flow	• B + CRI • B + CRI + CFM • B + CRI + PD • B + CRI + HD-Flow • B + CRI + Slow<i>flow</i>HD Mode
Focus and Frequency Composite (FFC)	
HD Zoom & Pan Zoom	
Steering	
Virtual Convex (Trapezoid Image, also with CrossXBeam (CRI)	
Wide Sector	
Beta-View	
Histogram Analysis with up to 3 user adjustable ROIs with comparative analysis on complex curves	

Patient information database	
Image Archive on hard drive	
3D/4D data compression (lossy/lossless)	
Inversion Mode	
Real-time automatic Doppler calculations	
Measurement, Calculations and Worksheets/Report for:	
• OB • GYN • Vascular • Cardio • Abdominal	• Small Parts • Transrectal • Pediatrics • Cephalic • Musculoskeletal (MSK)
Multigestational Calculations	
Integrated uplink for Cloud-based data storage (Tricefy™) (not available in all countries)	
GYN IOTA LR2, Simple Rules and ADNEX Model (not available in all countries)	
GYN IETA Protocol & Report (not available in all countries)	
GYN IDEA Protocol & Scan Assistant Guideline	
System options	
Advanced 4D	
VOCAL II	
Advanced VCI (Volume Contrast Imaging), including VCI-A, OmniView and Uterine Trace	
SonoVCAD <i>labor</i>	
Compression Elastography	
Shear Wave Elastography (not available in all countries)	
Advanced STIC:	
• Basic STIC • STIC M-Mode	• STIC-Flow • SonoVCAD<i>heart</i>
SonoAVC, including SonoAVC <i>follicle</i> , <i>antral</i> and <i>general</i>	
E4D advanced features (for G2 & G2 activation only)	
• 2D Modes, Bi-Plane, Bi-Plane CRI, Bi-Plane Steering • Real Time 4D Mode: B Mode and B + CFM/PD/HD-Flow Mode • VCI-A and VCI-A + CFM/PD/HD-Flow Mode • eSTIC	
V-SRI	
Steerable CW Mode	
Anatomical M-Mode (AMM) with up to 2 cursers	
Coded Contrast Imaging + 3D HyCoSy†	
Integrated Software DVR	
• Digital recording • One drive for data export and recording • DVD Formats: DVD+R, -R, +RW, -RW for recording, DVD and CD support for data export • USB support: FAT32 compatibility	
Advanced Security Features	
Premium Security Features (meeting USA DoD requirements; not available in all countries)	
<i>fetal</i> HQ (including speckle tracking capabilities)	
<i>fetal</i> HQ2: adding Quiver & Auto-Flip to <i>fetal</i> HQ (not available in all countries)	
Voluson Remote Update (not available in all countries)	

Peripheral options
Integrated printers: B&W, Color Thermal Printer
External Color desktop printer with network printing capabilities & connection kits for printing reports and images on connected printers (windows compatible)
ECG Digital Module
Foot Switch, with programmable functionality
Barcode Scanner
Magnetic Card reader (not available in all countries)
UPS – Uninterruptible Power Supply to prevent data/image loss in case of power failure assuring autonomy up to 15 minutes in scanning (may vary depending on battery age)
Power Filter
External Patient Monitor Set
Isolation Transformer
WLAN Adapter
USB Microphone

Display modes	
Simultaneous capability in combination with SRI and/or CRI:	
• B+PW • B+CFM, B+PD, B+TD • B+HD-Flow • B+M, B+AMM • B+3D, B+4D • B+CRI • B+SRI • B+CRI+SRI • Contrast[†]+SRI • B+CRI/3D+CRI • B+SRI/3D+SRI • B+CRI+SRI/3D+CRI+SRI • B+CRI/4D+CRI • B+SRI/4D+SRI • B+CRI/STIC+CRI • B+SRI/STIC+SRI	• B+CRI+SRI/STIC+CRI+SRI • B/B+CRI • B/B+SRI • B/B+SRI+CRI • B/CFM+CRI • B/CFM+SRI • B/CFM+CRI+SRI • B/PD+CRI • B/PD+SRI • B/PD+CRI+SRI • B/HD-Flow +CRI • B/HD-Flow +SRI • B/HD-Flow +CRI+SRI • B/SlowflowHD +CRI • B/SlowflowHD +SRI • B/SlowflowHD +CRI+SRI
Real-time Triplex Mode: (available on all probes)	• B/PD/PW • B/HD-Flow/PW • B/TD/PW
Selectable alternating modes:	• B/PD+PW or CW • B/CFM+PW or CW • B/PD+PW or CW
Multi-image (split, quad):	
• Live and/or frozen • Live Bi-Plane • Split: B+B, B/CFM+B/CFM or B/PD+B/PD or B/TD+B/TD or B/HD-Flow + B/HD-Flow or B/SlowflowHD + B/SlowflowHD or BF+BF, Contrast[†]+Contrast[†] • Split simultan: B+B/CFM or B+B/PD or B+B/HD-Flow or B+B/SlowflowHD • Split: B+PW or M or CW • Split: Frame Review/XTD-View • Quad: B+B+B+B or BF or Contrast[†], B/CFM+B/CFM+B/CFM+B/CFM or B/PD or B/TD or B/HD-Flow or B/SlowflowHD • Independent Cine playback • Quad: A+B+C+3D or 4D • TUI: 1x1, 1x2, 2x2, 3x2, 3x3, 3x4, 4x4 • Segmentation: quad (A/B/C/Segm. Object), single (Segm. Object) • Split: TUI Overview+1 slice	
• Zoom Read/Write (with or without overview image)	
Image Size: Standard & XL Format	

Colorized Image: available in B/M/PW/3D

Time line display:	
• Independent Dual B/PW Display • Display Formats: Top/Bottom selectable format (Size 1/2:1/2; 1/3:2/3; 2/3:1/3)	
Display annotation	
Patient name: First/Middle/Last Name, max. 62 characters	
ID: max 32 characters	
Secondary patient ID (Citizen Service Number)	
Accession #: max 16 characters	
Hospital Name: max 30 Characters	
Sonographer	
Gestational age (OB) or LMP (GYN)	
Birth date	
Date:	• MM/DD/YYYY • DD/MM/YYYY • YYYY/MM/DD
Time display selectable: 12/24 hours	
Probe name	
Application name	
Gray Scale bar	
Depth Scale	
Focal Zone Marker	
Frame Rate	
Zoom Start/Depth	
B-Mode:	• User Preset • Receiver Frequency • Gain • Dynamic Control • Gray Map
M-Mode/AMM –Mode:	• Edge Enhance • Persistence • SRI, CRI • Probe Orientation
PW Doppler Mode:	• Gain • Angle • Sample Volume Depth and Width • Wall Motion Filter • Doppler Frequency
Color Flow Imaging modes	• Reject • M-Cursor, AMM-Cursor • Time Scale
• Color Gain • Color Balance • Color Balance Marker • Quality • Wall Motion Filter • PRF	• Velocity or Frequency Scale • Spectrum Inversion • Time Scale • PRF • HPRF
3D/4D Mode:	• Color Map • Color Scale: kHz, cm/s, m/s • Power and Symmetrical Velocity Imaging • Color Velocity Range • Spectrum Inversion • Orientation Markers
• 3D/4D Sub Program • Threshold • Quality • Volume Box Angle • Mix • Acquisition Mode • Compression • VCI: slice thickness	• TUI: slice distance • TUI: slice position in overview image • STIC acquisition time • Calculated heart rate for STIC and eSTIC
Compression Elastography	• Tx Frequency • Transparency • Velocity Range
• Elasto Map • Persistence • Line Density	

TGC Curve
Cine Frame Number
Recorder Status
Body Pattern: 124 types organized in 10 anatomical groups
Measurement results
Displayed Acoustic Output: • TIS: Thermal Index Soft Tissue • TIC: Thermal Index Cranial (Bone) • TIB: Thermal Index Bone • MI: Mechanical Index
Predefined Biopsy Guide Line
ECG Line
Trackball function (Trackball and Trackball buttons)
Zoom overview image (zoom box position)

System Parameters

System setup
User Programmable Preset Capability, User program etc.
Display Languages: English, French, German, Spanish, Portuguese, Italian, Danish, Dutch, Finnish, Norwegian, Swedish, Russian, Japanese, Simplified Chinese
Keyboard Languages (Keycap Kits): English, French, German, Spanish, Italian, Danish, Finnish, Norwegian, Swedish, Russian, Swiss, South Slavic Latin
elFu (electronic Instructions for Use) Languages: Bulgarian, Croatian, Czech, Chinese Simplified, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Indonesian, Italian, Japanese, Kazakh, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian, Vietnamese
Free programmable Scan assistant lists including Add, Delete, Edit and Reorder of checklist items
Up to 800 Programmable Annotations organized in 10 anatomical groups, including a library function and auto-complete
6 programmable Px buttons for documentation preferences like Save, DICOM Send, Print, Check, Cine length, jpeg, etc.
Several user configurable functions:
• Clinic Name • Display (TGC curve, Screen Lock, Screensaver, Auto Scan Stop, Beeper, 3D/4D Screen Controls) • Trackball speed • Zoom Overview window • Dim function • Patient Info display • Title bar settings • Start Exam and End Exam configuration

Measure setup
M&A Setup including Add, Delete, Edit and Reorder of measure items
Application Setup including several parameters of Measurement, Doppler Trace and Calculation presets
Global Setup including several parameters of Measurement, Cursor and Result window presets
Post assign measurements
Auto Sequence measurements

Biopsy setup
User programmable needle guidelines

Pre-processing
Write Zoom up to 8x Magnification
B/M-Mode:

• Gain • TGC • Dynamic Range • Acoustic Output • Transmission Focus Position • Transmission Focus Number	• Transmission Frequency • Persistence Control • Line Density Control • Reject • Sweep Speed • M-Cursor position
PW-Mode: • Gain • Dynamic Range • Acoustic Output • Transmission Frequency • PRF	• Wall Motion Filter • Sample Volume Gate • Length, Depth, Pos • Velocity Scale • Sweep Speed
Color Flow Imaging Modes • Gain • Acoustic Output • PRF • Wall Motion Filter • Line density • Ensemble • Dynamic	• Smooth (Rise and Fall) • Frequency • Balance • Line Filter • Quality • Artifact Suppression

Post-processing	
Read Zoom: 0.8x – 3.4x Zoom (with HD-Zoom functionality up to 22x Zoom)	
B-Mode: • 2D Gain • Dynamic Contrast • Gray Map • Edge Enhance	• Colorized B • SRI II (Speckle Reduction Imaging)
M-Mode: • Gray Map • Colorized M • Edge Enhance	• Display Format • Sweep Speed
PW Mode: • Gray Map • Baseline Shift • Angle Correction • Colorized D	• Scale (kHz, m/s, cm/s) • Trace • Invert • Sweep Speed
Color Flow Imaging Modes • Display Threshold • Display Mode (V,V-T,T,P,P-T) (CFM only)	• Color Map • Scale (CFM and HD-Flow) • Baseline
B-Flow • Gray map • Colorized B-Flow • Advanced SRI (Speckle Reduction Imaging) • Dynamic Contrast	

Image processing and presentation
Digital Beamformer
743.265.431 system processing channel technology
Minimum Depth of Field: 0 – 1 cm (Zoom, probe dependent)
Maximum Depth of Field: 0 – 50 cm (probe dependent)
Depth Steps: up to 29 (probe dependent)
Transmission Focus: 1-5 Focus Points selectable (probe and application dependent)
Focal Zone position, up to 10 positions selectable
Continuous Dynamic Receive Focus/ Continuous Dynamic Receive Aperture for all probes
256 gray levels
16.8 million Colors 24 bit
Up to 280 dB Dynamic Range
Image reverse: Right/Left
Rotation: 0°, 180°

Cine features
• Prospective or Retrospective Cine Mode • Dual/Quad image CINE Display • CINE Gauge and CINE image number display • CINE Review Loop • Selectable CINE Sequence for CINE Review (by Start Frame and End Frame) • Side Change in dual CINE Mode • Measurements /Calculations & Annotations on CINE
Length: • 2D: 512MB: up to 10 min (depending on B-image size and FPS); typical: about 3 min/4000 images (with curved array: 15cm depth, angle 81°, 22 FPS) • M-Mode: 32MB: up to 1 min motion time (depending on sweep and depth) • PW/CW-Mode: 32MB: up to 1 min motion time (depending on sweep speed)
Cine operation: • Manual: image by image • Auto run: speed: 25 to 200% of real-time rate, play repeat mode: forward-forward, forward-backward-forward
Image/volume storage (archive)
Standard and fully anonymized archive available
Images stored as: • Raw Data file (proprietary format) • DICOM file (Single-or Multi-Frame)
Volume file stored as: • Raw Data file (proprietary format) • DICOM file
Size: typically: 0.8 – 5MB (depending on probe and adjusted volume size)
Compression: • 2D: JPEG, lossless, high, mid low • 3D/4D: Lossy and lossless compression available. Typical compression rates are 50% with lossless compression, 15% with lossy compression but maximum quality and 5% with lossy compression and reduced quality (approximate values).
Review of current exam and archived data sets (Single Images and Cine Clips). View format: Raw data, DICOM data. Display Formats: 1x1, 2x2, 3x3
Reload of current/ archived data sets: 2D Raw Data (incl. Color Doppler, Spectral Doppler and M-Mode). 3D Raw Data (single Volume incl. Calc. Cines). 4D Raw Data (Volume Cine).
Export as: • Bitmap files: BMP, TIFF, JPEG; • Raw files: RAW (2D), VOL (Volume data), 4DV • (RAW, VOL incl. Patient data – password protected) • Video File Format: AVI, MP4 • DICOM Files: DCM, DICOM Files with DICOMDIR • 3D Raw Data: export Cartesian format possible • Surface formats: STL, OBJ, PLY, 3MF, XYZ (with projected and full 3D export capabilities)
AVI Codec: MS Video 1, FullFrames
Export to: DVD+R(W), CD-R(W), Network, USB devices, email, Printer, DICOM®, Tricefy™
Export Anonymous function: available for following image types: AVI, BMP, TIFF, JPEG, MP4
Backup function to: DVD+R(W)/CD-R(W), Network, USB devices
Repro function: Settings recall (e.g. Geometry, Gain, Color map, etc.) from a stored or reloaded picture
Exam history: Direct access to images from previous exams; direct access to Measure Reports images from previous exams; Image compare window on screen to compare images from previous exams with current exam image
Hard Drive Data Storage space: approx. 900 GB

Connectivity
Ethernet network connection
6 USB 3.0 ports for USB devices
DICOM support: • Verify • Print • Store • Modality Worklist • Structured Reporting • Storage Commitment • MPPS (Modality performed procedure step) • Media Exchange • Off network / mobile storage queue • Query/Retrieve • TLS
Tricefy™ features: • Store • Patient Share • .pdf Report storage • Query Retrieve

Scanning Parameters

B-Mode		
B-Mode for all probes		
B Acoustic Power	1-100	
Scan Angle	Probe dependent	
Gain range	+15 (100%) to -25 dB (0%)	
Gray scale values	8 bit	
SRI	5 steps (1-5)	
CRI	8 steps (1-8)	
CRI filter	4 steps: off, low, mid, high	
CE	On/Off (Probe dependent)	
FFC	On/Off (Probe dependent)	
Shadow Reduction	On/Off (Probe dependent)	
Persistence filter	8 steps (pre)	
Line filter	3 steps (pre) off, low (12.5/75/12.5%), high (25/50/25%)	
Line Density	3 steps (pre) low, norm, high	
Reject	51 steps (pre) from 0 to 255	
Enhance	6 steps 0, 1, 2, 3, 4, 5	
Gray maps	21 (18 basic maps and 3 User-defined maps)	
Tint maps	10	
Dynamic	12 different dynamic curves C1 – C12	
Display Modes	B, XTD	
Max. B-Mode Frame Rate	> 3000 frames/sec	
Frequency Range	1 to 18 MHz depending on the probe, adjustable in 3 fundamental steps (penetration, normal, resolution) and up to 5 Harmonic steps (HI Pen, low, mid, high, HDRes)	
Screen Formats: • 2D Imaging: Single (B), Dual (B+B), Quad (B+B+B+B) • XTD View: Single (XTD), Dual (B+XTD)		
Coded Excitation (CE): • RIC5-9-D • RIC6-12-D	• ML6-15-D • RM7C • eM6C G2 • 11L-D	• RAB6-D • C2-9-D
Coded Harmonic Imaging available on all probes		
Focus Frequency Composite (FFC): • IC5-9-D • C2-9-D	• RIC5-9-D • RIC6-12-D • 9L-D • RAB6-D	• C1-6-D • RM7C • eM6C G2
Compound Resolution Imaging (CrossXBeam CRI) available on all (curved and linear) probes, except: M5Sc-D and S4-10-D		
Speckle Reduction Imaging (SRI II) available on all probes		
Virtual Convex: * also with CrossXBeam CRI	• RSP6-16-D* • 9L-D* • S4-10-D	• 11L-D* • M5Sc-D • ML6-15-D*
Wide Sector: • RIC6-12-D • RM7C	• RIC5-9-D • RAB6-D • IC5-9-D	• C1-6-D • eM6C G2 • C2-9-D
HDRes: • RM7C • RIC6-12-D	• eM6C G2 • RAB6-D • C2-9-D	• IC5-9-D • RIC5-9-D • C1-6-D
HI Pen: • RM7C • RAB6-D	• eM6C G2 • RIC5-9-D	• C2-9-D • C1-6-D • IC5-9-D

Shadow Reduction:	• C1-6-D • C2-9-D • ML6-15	• RIC6-12-D • RIC5-9-D • IC5-9-D
Confocal Imaging (Continuous focalization in transmit without physical focus)	• C2-9-D • M5Sc-D • eM6C G2	

M-Mode	
M-Mode for all probes	
Working Modes	M (conventional M- Mode) AMM (Anatomical M-Mode)
Power control range	1-100
Gain range	+15 (100%) to -25 dB (0%)
M-Mode sweep speeds:	
• 900/450/300/225/150/100 pixels/sec; • 26.44/13.22/8.81/6.61/4.40/2.94 cm/s in relation to system monitor	
Review (memory times)	>60 s (32MB)
Signal processing M-Mode:	• Dynamic range: 1 to 12 • Reject: 0 to 255 • Enhance: 0 to 5
Display Modes:	• M: 2D+M, 2D+M/CFM, 2D+M/HD-Flow, 2D+M/SlowflowHD, 2D+M/PD, 2D+M/TD • AMM: 2D+AMM, 2D/CFM+AMM/CFM, 2D/HD-Flow +AMM/HD-Flow, 2D/SlowflowHD +AMM/SlowflowHD, 2D/TD+AMM/TD
Screen Formats: (window arrangement)	
• 2D+M and 2D+AMM: up/down (horizontal): three different sub formats 30/70, 50/50, 70/30% left/right (vertical): 50/50% • 2D+AMM+AMM: left/right-up/down: 50/25/25%	

M-Color Flow Mode		
Probes:	• RIC5-9-D • RM7C • S4-10-D • M5Sc-D	• RIC6-12-D • eM6C G2 • C2-9-D
Acoustic MCFM Power	1-100	
MCFM Color Maps	8 maps	
CFM Gain	+/- 15 dB range, 0.1 dB steps	
CFM Velocity Scale Range	PRF: 150Hz to 20.5kHz	
Wall Motion Filter	8 – 3000 Hz	
Ensemble (color shots per line)	8-16, step size 1	
Gentle color filter		
Smooth filter:	Rise: 12 steps Fall: 12 steps	
CFM Spectrum Inversion		
CFM Baseline Shift	17 steps	
Pre-settable and independently adjustable B-, M and MCFM Gain		
CFM Threshold	1 – 255 steps	
Balance	25 – 225, step size 5	
Artifact suppression	On/Off	
Color Display Mode:	• V (Velocity) • V-T (Velocity + Turbulence) • V-P (Velocity + Power)	
	• T (Turbulence) • P-T (Power + Turbulence)	
Real –time Triplex Mode	B + M + MCFM in any depth	

Spectral Doppler Mode (PW, CW)		
Spectral Doppler Mode for all probes		
Operating Modes	PW (Pulsed Wave Doppler, Single Gate), Steerable CW (Continuous Wave Doppler)	
Transmit Frequencies	PW-Doppler: 1.75-18 MHz CW-Doppler: 1.75-16 MHz	
Pulse Repetition Frequency (PRF)	PW-Doppler: 0.9-22 kHz CW-Doppler: 1.3-40.0 kHz	
Sample Volume (Doppler Gate)	Length: 0.7,1,2,3,4,5,6, 7,8,9,10,15 mm Position: 5 mm to B-scan end, Angle correction: -85°...0°...+85°	
Power control range	1-100	
Gain range	+15 to -25 dB (PW) +15 to -15 dB (CW)	
WMF (wall motion filter)	PW: 30...500 Hz, CW: 30...1000 Hz	
Baseline shift	± PRF/2, ± 8 steps	
Spectrum Analyzer	FFT (Fast Fourier Transformation), max. 256 channels, 256 amplitude levels	
PW sweep speeds	Simplex (26.44/13.22/8.81/6.61/4.40/2.94 cm/s), Duplex/ Triplex (26.44/13.22/8.81/6.61/4.40/2.94 cm/s)	
Review (memory times)	>60 s(32MB)	
Measurable flow velocities:		
● PW: 1cm/s – 8m/s (α=0°, 2.0MHz, max. Baseline shift) 1cm/s – 16m/s (α=60°, 2.0MHz, max. Baseline shift)		
● CW: 1cm/s – 11.6m/s (α=0°, 2.0MHz, max. Baseline shift) 1cm/s-23.20m/s (α=60°, 2.0MHz, max. Baseline shift)		
Signal processing: Dynamic range: 15 steps (10 to 40), Gray maps: 18 basic curves and 3 User-defined (pre, post) Tint maps: 11		
Scale display	Vert.: kHz, cm/s, m/s (selectable), Hor.: 1s marker (big), ½ s marker (small)	
Screen Formats	2D/D: up/down (horizontal): three different sub formats 30/70, 50/50, 70/30% left/right (vertical): 50/50%	
Display Formats	2D/D (duplex update, simultaneous); 2D+CFM/D, 2D+HD-Flow/D, 2D+PD/D, 2D+TD/D (triplex update, CW or PW). 2D+SlowflowHD/D (duplex update). 2D+CFM/PW, 2D+PD/PW, 2D+HD-Flow/PW, 2D+TD/PW, (triplex simultaneous, PW only)	
Audio Modes	Stereo (both directions separately in both channels)	
Audio Volume	Adjustable, control digipots	
CW Doppler, steerable	● S4-10-D ● M5Sc	● C2-9-D ● C1-6-D
CW Doppler, non-steerable: RAB6-D		

Color Doppler Mode	
Color Doppler Mode for all Probes	
Screen Formats	2D+CFM (Single, Dual, Quad)
Display Modes:	
• Simultaneous dual mode: 2D/2D+CFM • Triplex mode: 2D+CFM/PW, 2D/M+MCFM • Volume Mode: 3D+CFM	
Color coding:	
• Steps: 65536 color steps • Display modes: V-T (velocity + turbulence), V (velocity), V-P (velocity + power), T (turbulence), P-T (power + turbulence)	
Depth range	Axial: 0 to B scan range

	Lateral: 0 to B scan range
Baseline shift	17 steps (independent from spectral Doppler)
Inversion of color direction	Yes
Wall Motion Filter	7 steps (low1, low2, mid1, mid2, high1, high2, max)
Smoothing Filter	12 steps rising time, 12 steps falling time
Gain Control	+15 dB to -15 dB, 0.2 dB steps
Line Density (color line density)	10 steps
Ensemble (color shots per line)	CFM: 7 to 31; MCFM: 8 to 16
Flow Resolution	4 steps (low, mid1, mid2, high)
Pulse repetition frequency	CFM: 150 Hz to 20.5 kHz MCFM: 150 Hz to 20.5 kHz
Color Map	Up to 8 different color codes for each probe
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Balance	From 25 to 225
Max. meas. velocity	4.23 m/sec
Min. meas. velocity	0.3 cm/sec
Scale	kHz, cm/s, m/s
Automatic moving tissue suppression	Yes
Max. Color Doppler Frame Rate	> 450 frames/sec

Power Doppler Mode (PD)	
Power Doppler Mode for all Probes	
Screen Formats	2D+PD (Single, Dual, Quad)
Display Modes:	
• Simultaneous dual mode: 2D/2D+PD • Triplex mode: 2D+PD/PW • Volume Mode: 3D+PD	
PD coding	256 color steps
PD window size	Lateral: maximum to minimum B mode scan angle Axial: B-scan range
Display mode	P (power)
Wall motion Filter	7 steps (low1, low2, mid1, mid2, high1, high2, max)
Smoothing Filter	Rising edge: 12 steps Falling edge: 12 steps
Gain Control	+15 dB to -15 dB, 0.2 dB steps
PD Ensemble	7 to 31
PD Line Density	10 steps
Pulse repetition frequency	150 Hz to 20.5 kHz
PD Map	8 different color codes for each probe
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225 in 41 steps
Artifact suppression	Yes

HD-Flow	
HD-Flow Mode for all Probes	
Screen Formats	Single, Dual, Quad, 2D+HDF
Display Modes:	
• Simultaneous dual mode: 2D/2D+HDF • Triplex mode: 2D+HDF/PW; 2D/M+MHDF • Volume mode: 3D+HDF	
HD-Flow Coding Steps	256 color steps
HD-Flow window size lateral	Maximal to minimal B mode scan angle; axial: B-scan range
Wall Motion Filter	8 steps (low1, low2, mid1, mid2, high1, high2, max1, max2)
Smoothing Filter	12 steps rising edge 12 steps falling edge
Gain Control	+15 dB to -15 dB, 0.2 dB steps
HD-Flow Ensemble	7 to 31
HD-Flow Line Density	10 steps
Pulse repetition frequency	150 Hz to 20.5 kHz
HD-Flow Map	8 different color codes for each probe
Frequency Range	1 to 18 MHz depending on the probe adjustable in three steps (low, mid, high)
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225
Line Filter	8 steps (off, 1 to 7)
Artifact suppression	Yes

Radiantflow		
• RIC5-9-D	• 9L-D	• C2-9-D
• IC5-9-D	• RM7C	• C1-6-D
• RIC6-12-D	• RAB6-D	• M5Sc-D
• ML6-15-D	• eM6C G2	
Steps	low/mid/high	

SlowflowHD		
Probes:	• ML6-15-D • RM7C • C1-6-D	• eM6C G2 • RAB6-D • C2-9-D
Screen Formats		Single, Dual, Quad, 2D+ SlowflowHD
Display Modes:		
• Simultaneous dual mode: 2D/2D+ SlowflowHD		
Triplex mode: 2D+ SlowflowHD /PW (triplex update); 2D+ SlowflowHD /M, 2D+ SlowflowHD /AMM		
SlowflowHD Coding Steps		256 color steps
SlowflowHD window size lateral		Maximal to minimal B mode scan angle; axial: B-scan range
Wall Motion Filter		8 steps (low1, low2, mid1, mid2, high1, high2, max1, max2)
Smoothing Filter		12 steps
Gain Control		+15 dB to -15 dB, 0.2 dB steps
Line Density		10 steps
Pulse repetition frequency		auto adjusting
Map		8 different color codes for each probe
Frequency Range		1 to 18 MHz depending on the probe adjustable in three steps (low, mid, high)
Flow Resolution		4 steps (low, mid1, mid2, high)

Balance	From 25 to 225
Line Filter	8 steps (off, 1 to 7)
Artifact suppression	4 steps (off, low, mid, high)

Tissue Doppler Mode (TD)		
Probes:	• eM6C G2	• C2-9-D
• RIC5-9-D	• RAB6-D	• C1-6-D
• RIC6-12-D	• S4-10-D	• M5Sc-D
• RM7C		
Screen Formats	Single, Dual, Quad, 2D+TD	
Display Modes	Simultaneous dual mode: 2D/2D+TD; Triplex mode: 2D+TD/PW, 2D/M+MTD;	
TD coding steps	65536 color steps	
Depth range	Axial: 0 to B-scan range Lateral: 0 to B-scan-range	
Baseline shift	17 steps	
Inversion of color direction	Yes	
Smoothing Filter	12 steps rising time, 12 steps falling time	
Gain Control	+15 dB to -15 dB, 0.2 dB steps	
Line Density (color line density)	10 steps	
Ensemble (Color shots per line)	3 to 31	
Flow Resolution	4 steps (low, mid1, mid2, high)	
Pulse repetition frequency	150 Hz to 20.5 kHz	
TD Map	4 different color codes for each probe	
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)	
Balance	From 25 to 225	
Max. meas. velocity	4.23 m/sec	
Min. meas. velocity	0.3 cm/sec	
Display Mode	V (velocity)	
Scale	kHz, cm/s, m/s	

PW-Tissue Doppler Mode (PW-TD)		
Probes:	• eM6C G2	• C2-9-D
• RIC5-9-D	• RAB6-D	• C1-6-D
• RIC6-12-D	• S4-10-D	• M5Sc-D
• RM7C		
Operating Modes	2D+TD/PW (Tissue Doppler + Pulsed Wave Doppler, Single Gate)	
Transmit Frequencies	1.75..18 MHz	
Pulse Repetition Frequency (PRF)	0.9..7.0 kHz	
Sample Volume (Doppler Gate)	Length: 0.7,1,2,3,4,5,6, 7,8,9,10,15 mm Position: 5 mm to B-scan end, Angle correction: -85°...0°...+85°	
Power control range	1-100	
Gain range	B-Mode: +15 to -25 dB TD: +15 to -15 dB PW: +15 to -25 dB	
WMF (Wall Motion Filter)	PW: 30...500 Hz,	
Baseline shift	± PRF/2, ± 8 steps	
Spectrum Analyzer	max. 128 frequencies, 256 amplitude levels	
PW sweep speeds	Duplex/Triplex (26.44 / 13.22 / 8.81 / 6.61 / 4.40 / 2.94 cm/s)	
Review (memory time)	>60 s (32MB)	
Measurable velocities	1cm/s – 1.3m/s (α = 0°, 2.0MHz, max. zero shift)	

	1cm/s – 2.5m/s ($\alpha = 60^\circ$, 2.0MHz, max. zero shift)
Signal processing	Dynamic range: 15 steps (10 to 40) Gray maps: 18 basic curves and 3 User-defined (pre, post) Tint maps: 11
Scale display	Vert.: kHz, cm/s, m/s (selectable) Hor.: 1s marker (big), ½ s marker (small)
Screen Formats	2D+TD/PW: horizontal: three different sub formats 30/70, 50/50, 70/30% vertical: 50/50%
Display Formats	2D+TD/PW (duplex/triplex update/simultaneous);
Audio-Modes	Stereo (both directions separately in both channels)
Audio Volume	Adjustable

Volume Scan Module

Vol. scan size: max. 64 MB for gray volumes, max. 90 MB for color volumes; The required memory space depends on scan parameters (VOL-box size and quality (low, mid1, mid2, high1, high2, max). Typical: 0.8-5 MB

Lines/2D-image: max. 1024 (typ. 80 to 350)

2D-images/volume: Up to 4096 (Acquisition mode dependent)

Max. Volumes/sec.: >1200 (typ. 10-20), depending on probe and scanning parameters

4D Volume Cine: up to 400 volumes, up to 512 MB

Display of sectional plane images: synchronous with control seeing, arbitrary movement in volume, monitored position in volume

Rotation: 360°, 1° or 3° increments (X-, Y- and Z-axis)

Magnification. Adjustable from 0.3 to a factor of 4.00

Acquisition Modes:

- 3D Static:
 - 3D (2D incl. CRI)
 - 3D/PD (incl. CRI)
 - 3D/CFM (incl. CRI)
 - 3D/Slowflow3D
 - 3D B-Flow
 - 3D/HD-Flow incl. CRI
 - 3D Contrast[†] (Coded PI, CCIS)
- 4D:
 - 4D Real Time
 - 4D Biopsy
 - VCI-A
 - VCI-OmniView
 - STIC
 - eSTIC

- STIC:
 - Fetal Cardio
 - STIC Angio: B/Power Doppler (incl. CRI)
 - STIC CFM: B/Color Doppler (incl. CRI)
 - STIC HD-Flow: B/HD-Flow (incl. CRI)
 - STIC B-Flow
 - STIC TD
 - STIC with Contrast[†]

- eSTIC (eM6C G2 probe only):
 - STIC B (Fetal Cardio)
 - STIC CFM (B/Color Doppler)
 - STIC PD (B/Power Doppler)
 - STIC B/HD-Flow
 - STIC B/TD (B/Tissue Doppler)

Visualization Modes:

- Render
 - 3D/4D Rendering (diverse surface and intensity projection modes)
 - SonoRender*live*
- Sectional Planes
 - Multiplanar
 - OmniView, actual and projected view
 - Niche

- SonoVCAD*labor*
- TUI (Tomographic Ultrasound Imaging) (overview image+parallel slices)
 - TUI Standard
 - SonoVCAD*heart*

Visualization Modes:

- Volume Analysis
 - VOCAL: semi-auto/ manual segmentation tool (segmentation using touch screen), (3D Static only) + Threshold Volume: measure volume below and above a threshold
 - SonoAVC*follicle* (Sono Automated Volume Count)
 - SonoAVC*antral*
 - SonoAVC*general*
- VCI (Volume Contrast Imaging)
- HD*live* Studio: 3 free moveable light sources and types

Render Modes:

- HD*live* Silhouette
- HD*live* Flow
- Surface Enhanced
- Color
- Mix Mode of two render modes
- Surface Texture
- Surface Smooth
- HD*live* Studio
- HD*live* Flow Silhouette
- Transparency modes: max-min- and X-ray
- Gradient Light
- Inversion
- Glass Body
- Light

Display graphics:

- Rotation axis, center point
- ROI box, 3D Frame
- Temporary display of onscreen controls (rotation, translation)

Gray maps: Slices: 21 (18 basic curves and 3 User-defined (pre, post) 3D Image: one general map adjustable with bright (-50 to +50) & contrast (-50 to +50))

Tint maps: Slices: 10; 3D image: 10

Depth render maps: 3

V-SRI:	• RIC6-12-D	• RM7C
• RIC5-9-D	• RAB6-D	• eM6C G2

BF (B-Flow)

B-Flow for all probes except: S4-10-D and M5Sc

Screen Formats	Single (BF), Dual (BF+BF), Quad (BF+BF+BF+BF)
Display Modes	BF, Update: BF/PW
Acc. Power range	1 – 100
Scan angle	Taken from 2D
Gain range	+15 to -25 dB
Gray scale values	8 bit
SRI	Taken from 2D
Persistence filter	8 steps (pre)
S./PRI	1.00, 1.50, 2.00, 3.00, 4.00, 5.00
Quality	3 steps (pre) low, norm, high
Enhance	6 steps (pre) 0, 1, 2, 3, 4, 5
Gray maps	21 (18 basic maps and 3 User-defined maps)
Tint maps	10
Dynamic	12 different dynamic curves C1 – C12
Accumulation	Off, 0.20, 0.35, 0.50, 0.75, 1.00, 1.50, Infinite
Background	0, 1, 2

Contrast Imaging†		
Probes:		
• C1-6-D	• ML6-15-D	• 9L-D
	• M5Sc-D	• RIC5-9-D
Low MI Contrast Capabilities		
Acc. Power range	1 – 100	
Scan angle	Taken from 2D	
Gain range	+15 to -25 dB	
Gray scale values	32 bit	
SRI	Taken from 2D	
Persistence filter	8 steps (pre)	
S./PRI	1.00, 1.50, 2.00, 3.00, 4.00, 5.00	
Quality	3 steps low, norm, high	
Enhance	6 steps (pre) 0, 1, 2, 3, 4, 5	
Gray maps	21 (18 basic maps and 3 User-defined maps)	
Tint maps	10	
Dynamic	12 different dynamic curves C1 – C12	
Accumulation	Off, 0.20, 0.35, 0.50, 0.75, 1.00, 1.50, Infinite	
Background	0, 1, 2	
Time Delay	0, 0.5, 1, 2, 3, ...10	
Display Modes:		
• Coded PI	• Coded PI: CIS	• Coded PI: CCIS
Screen Formats:		
• Code PI: Single (B), Dual (B+B), Quad (B+B+B+B)		
• CIS: Dual simultan (2D+Coded PI)		
• CCIS: Single (B), Dual (B+B), Quad (B+B+B+B)		
Contrast Analysis Capabilities: up to 3 user adjustable ROIs with comparative analysis on complex curves		

Compression Elastography	
Probes:	• RIC5-9D • 11L-D
	• IC5-9-D • ML6-15D
Acoustic Power range: 1 – 100	
Tx Frequency: 3 (penet/norm/resol)	
Transparency: 51 steps (0,5, 10, ...255)	
Soft Compress:	• Range: 0-9 • Step Size: 1
Hard Compress	• Range: 0-9 • Step Size: 1
PRF: 10, 15, 25, 40, 60, 85 Hz	
Elasto Maps: 8	
Persistence:	• Range: 1-9 • Step Size: 1
Line Dens.:	Range: 1-2
Filter Axial:	• Range: 1-9 • Step Size: 1
Filter Lateral:	• Range: 1-21 • Step Size: 2
Window Length:	• Range: 8-25 • Step Size: 1
Screen Formats:	
• Single (2D/Elasto) • Dual (2D/Elasto+2D/Elasto) • Quad (2D/Elasto+2D/Elasto+2D/Elasto+2D/Elasto)	
Elastography Analysis up to 4 user adjustable ROIs with comparative analysis on complex curves	
Elastography Ratio Measurement	

Shear Wave Elastography (not available in all countries)	
Probes:	• C1-6-D
Acoustic Power range: 1 – 100	
Gain: 0 - 100	
Frequency: 50 – 400 Hz	
Transparency: 51 steps (0,5, 10, ...255)	
Elasto Maps: 8	
Velocity Scale: 2,0 – 10,0 m/s (22 steps)	

Bi-Plane Mode (available on eM6C G2 only)	
Acc. Power range	1 – 100
Scan angle	B-Mode angle: 85° Bi-Plane angle: 90°
Gain range	+15 to -25 dB
Gray scale values	8 bit
SRI	5 steps (1-5)
CRI	8 steps (1-8)
CE	On/Off
FFC	On/Off
Persistence filter	8 steps (pre)
Line filter:	3 steps (pre) off, low (12,5/75/12,5%), high (25/50/25%)
Line Density:	3 steps (pre) low, norm, high
Reject:	51 steps (pre) from 0 to 255
Enhance:	6 steps 0, 1, 2, 3, 4, 5
Gray maps:	21 (18 basic & 3 User-defined maps)
Tint maps:	10
Dynamic:	12 different dynamic curves C1–C12
Steering:	Max 20° (+/- 10°)

Measurements

Generic measurements		
Distance:		
• Distance (Point to Point)	• 2D Trace (Point Length)	
• Distance (Line to Line)	• Stenosis (% Dist.)	
• 2D Trace (Trace Length)	• Ratio D1/D2	
Area/Circumference:		
• Ellipse	• Stenosis (%Area)	
• Trace (Line)	• Area (2 Dist.)	
• Trace (Point)	• Ratio A1/A2	
Volume: following Methods:		
• 1 Distance	• 3 Distance	
• 1 Ellipse	• Multiplane-Planimetric	
• 1 Dist. + Ellipse	Volume (3D only)	
Angle:		
• Angle (3 Point)	• Angle (2 Line)	
M-Mode:		
• Distance (Point to Point)	• HR	
• Time	• Stenosis (% Dist.)	
• Slope	• IMT	
• Vessel Diam.	• Stenosis Diam.	
• Ratio D1/D2		
PW Doppler Mode:		
• Auto & Manual Trace:		
- PS (Peak Systole)		
- ED (End Diastole)		
- MD (Mid. Diastole)		
- S/D (Ratio)		
- TAmx		
- HR		
- PI (Pulsatility Index)		
- RI (Resistance Index)		
• Vol. Flow		
• PGmax, PGmean		
• TAmx (Time avg. max. Velocity)		
• TAmx (Time avg. mean Velocity)		
• VTI (Velocity Time Integral)		
Heart Rate		
Vessel:		
• R/L Vessel area	• R/L Stenosis area	
• R/L Vessel diam.	• R/L Stenosis diam.	
• R/L IMT	• R/L Flow diam.	
Single Measurements:	• PS/ED	• Acceleration
• Velocity	• RI	• HR
• Time	• PI	• ED
	• PS	

Abdomen calculations	
Liver	Gallbladder
Pancreas	Spleen
Kidney (right/left)	Renal Artery (right/left)
Aorta (Proximal, Mid, Distal)	Portal Vein
Vessel	Bladder Volume
Summary Reports	

Small part calculations	
Thyroid (right/left)	
Testicle (right/left)	
Dorsal Penile Artery (right/left)	
Vessel	
Summary Reports	

Small part breast calculations	
Lesion 1-5 (right/left)	

Summary Reports

Obstetrics calculations	
Fetal Biometry	
Early Gestation	
Fetal Long Bones	
Fetal Cranium	
NT Method: SonoNT/Manual	
AFI	
Uterus	
Ovary right/left	
Umbilical Vein	
Placenta Volume	
Ductus venosus: S, D, a, PI, PLI, PVIV	
Doppler measurements: Ductus Art., Ductus Ven., Ao, Carotid, MCA, Celiac Artery, Superior Mesenteric Artery, Umbilical Art., Umbilical Vein, FHR, Uterine Art.	
Gestational Age Calculation	
Gestational Growth Calculation	
Fractional limb Volume	
Fetal Weight (FW) Estimation	
Fetal Trend Graph	
Multi-Gestational Calculation & Fetal Compare	
Calculation and Ratios	
Fetal Qualitative Description (Anatomical assessment)	
Fetal Environmental Description (Biophysical profile)	
Summary Reports	

Obstetrics Fetal Echo	
Chambers	
Thorax	
Aorta/LVOT	
Pulmonary/RVOT	
Venous	
<i>fetal</i> HQ	
FHR	
Tricuspid valve	
Mitral Valve	
Aortic	
Pulmonary	
LPA	
RPA	
Ductus Art.	
Cardiac Output	
LT TEI	
RT TEI	
Ductus Ven.	
Umbilical Vein	
Pulmonary Veins	
Summary Reports	

Obstetrics Z-scores	
• Long Axis	• Obl. Short axis
• Aortic Arch	• 4 Chambers
• Short Axis	• Summary Reports
• Thorax	

fetalHQ & fetalHQ2

- Global Heart Size: Length, Width, Area, Axis
- Global Heart Shape: Global Sphericity Index
- Ventricular Size (for RV & LV): Transverse Diameter (24 segment), BAL, Area
- Ventricular Shape (for RV & LV): Sphericity Index (24 segment)
- Ventricular Contractility (for RV & LV): Transverse Diameter Fractional Shortening (24 segment), Fractional Area Change, Global Strain, RV Free Wall Strain, MAPSE/TAPSE
- Ventricular Contractility (LV only): EDV, ESV, CO, CO/kg, SV, SV/kg, EF

Cardiology calculations

2D Mode:

- LV Simpson (Single & Bi-Plane)
- Volume (Area Length)
- LV-Mass (Epi & Endo Area, LV Length)
- LV (RVD, IVS, LVD, LVPW)
- LVOT Diameter
- RVOT Diameter
- MV (Dist A, Dist B, Area)
- TV (Diameter)
- AV/LA (Aortic Valve/Left Atrium)
- PV (Diameter)

M-Mode:

- LV (IVS, LVD, LVPW, RVD)
- AV/LA (Ao Root Diam, LA Diam, AV Cusp Sep., Ao Root Ampl)
- MV(D-E, E-F Slope, A-C Interval, EPSS)
- HR (Heart Rate) Atrial HR

PW-Mode:

- MV (Mitral Valve)
- AV (Aortic Valve), TV (Tricuspid Valve)
- PV (Pulmonary Valve)
- LVOT & RVOT Doppler (Left & Right Ventricle Outflow Tract)
- Pulmonic Veins
- PAP (Pulmonary Artery Pressure measurement)
- HR (Heart Rate)
- TEI-Index

C-Mode:

- PISA

Others:

- | | |
|------------------------------|---------------------------------------|
| • Diast. Vol (Bi) | • Mean Gradient |
| • Syst. Vol. (Bi) | • Mean Gradient Acceleration |
| • Stroke Volume | • VTI |
| • Volume Flow | • TVA |
| • Cardiac Output | • PG |
| • Ejection Fraction | • PHT |
| • Fractional Shortening | • MVA |
| • Myocardial Thickness | • AVA |
| • LA/Ao Ratio | • ERO |
| • E/A Peak | • CVP (Cardio Vascular Profile) Score |
| • Peak Gradient Acceleration | |

Summary Reports

Transrectal calculations

Prostate

Vessel

Summary Reports incl. PSAD, PPSA(1), PPSA(2) calculation

Vascular calculations

Left/Right CCA (Common Carotid Artery)

Left/Right ICA (Internal Carotid Artery)

Left/Right ECA (External Carotid Artery)

Left/Right Vertebral Artery

Left/Right Subclav.

Left/Right Bulb

Vessels

Summary Reports

Gynecology calculations

Uterus

Left/Right Ovary

Left/Right Follicle

Fibroid

Endometrial thickness (Dist, Double Dist.)

Cervix Length

Left/Right Ovarian Artery

Left/Right Uterine Artery

Vessels

Pelvic Floor

Left/Right Ovarian Cyst

Left/Right Ovarian Mass

Left/Right Adnexal Cyst

Generic Cyst

Left/Right Adnexal Mass

Generic Mass

Bladder (Length/Width/Height/Vol)

FHR

GYN IOTA LR2, Simple Rules and ADNEX Model. (not available in all countries)

IETA unenhanced ultrasound examination and enhanced ultrasound examination – Sonohysterography (not available in all countries)

IDEA Protocol

Uterus classification (ESHRE/ESGE and ASRM)

Summary Reports

Pediatric calculations

Left/Right Hip Joint

Pericallosal Artery

Summary Report

Cephalic calculations

Left/Right ACA (Anterior Cerebral Artery)

Left/Right MCA (Middle Cerebral Artery)

Left/Right PCA (Posterior Cerebral Artery)

Basilar Artery

A-Com. A (Anterior Com. Artery)

P-Com. A (Posterior Com. Artery)

Left/Right CCA (Common Carotid Artery)

Left/Right ICA (Internal Carotid Artery)

Left/Right Vertebral Artery

Vessels

Summary Reports

OB Tables

Age Tables

- AC: ASUM, CFEF, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Jeanty, JSUM, Kurmanavicius, Merz, Nicolaides, Shinozuka, Siriraj, Tokyo
- AD: Persson
- APAD: Merz
- APTD: Hansmann
- APTDxTTD: Shinozuka, Tokyo
- BOD: Jeanty
- BPD: ASUM, ASUM (old), Campbell, CFEF, Chitty (outer-outer) (outer-inner), Eik-Nes, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Jeanty, Johnsen, JSUM, Kurmanavicius, Kurtz, Leung, McLennanPersson, Merz, Nicolaides, OSAKA, Rempen, Sabbagha, Shinozuka, Siriraj, Tokyo, Verburg
- CEREB: Chitty, Goldstein, HILL, Hobbins, Nicolaides, Verburg
- CLAV: YARKONI
- CRL: ASUM, DAYA, Eik-Nes, Hadlock, Hansmann, Intergrowth, JSUM, McLennan, Persson, Pexters, Nelson, OSAKA, Rempen, Robinson, Robinson_BMUS, Sahota, Shinozuka, Tokyo, Verburg
- FL: ASUM, CFEF, Chitty, Eik-Nes, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Hohler, Jeanty, JSUM, Kurmanavicius, Leung, Persson, Merz, Nicolaides, O'Brien, OSAKA, Shinozuka, Siriraj, Tokyo, WARDA, Johnsen
- FTA: OSAKA
- FIB: Jeanty
- GS: Hansmann, Hellman, Holländer, Rempen, Tokyo, Nyberg
- HC: ASUM, CFEF, Chitty, Hadlock_82, Hadlock_84, Hansmann, Jeanty, Kurmanavicius, Leung, Merz, Nicolaides, Siriraj, Johnsen
- HL: ASUM, Hobbins, Jeanty, Merz, OSAKA
- LV: Tokyo
- MAD: Eik-Nes, eSnurra, Kurmanavicius
- OFD: ASUM, Chitty, Hansmann, Jeanty, Kurmanavicius, Merz, Nicolaides
- RAD: Jeanty, Merz
- TIB: Jeanty Merz
- TAD: CFEF, Merz
- TTD: Hansmann
- ULNA: Jeanty, Merz

Growth Tables

- AC: ASUM, CFEF, Chitty, Hadlock, Hansmann, Jacot-Guillarmod, Jeanty, JSUM, Lai_Yeo, Kurmanavicius, Lessoway, Leung, Merz, Nicolaides, Shinozuka, Siriraj, Tokyo, Verburg, Johnsen, Medvedev, Stork, Intergrowth, WHO
- AD: Persson
- AFI: Moore
- AOIST ED, PI, RI, PSV, TAMX: DelRio2006
- Aorta: Vmax: Rizzo
- APAD: Merz
- APTD: Hansmann
- APTDxTTD: Shinozuka_SD
- AxT: Shinozuka, Tokyo
- BOD: Jeanty
- BPD: ASUM, Campbell, CFEF, Chitty, Eik-Nes, Hadlock, Hansmann, Jacot-Guillarmod, Jeanty, JSUM, Kurmanavicius, Lai_Yeo, Lessoway, Leung, Persson, McLenna, Merz, Nicolaides, OSAKA, Paladini, Sabbagha, Shinozuka, Siriraj, Tokyo, Verburg, Medvedev, Stork, Intergrowth, WHO
- CLAV: YARKONI
- CM: Nicolaides
- CRL: ASUM, Hadlock, Hansmann, Intergrowth, JSUM, McLennan, Persson, OSAKA, Robinson, Robinson 1993, Shinozuka, Tokyo, Pexters, Medveev
- DV a/S: JSUM
- DV PI: Baschat, JSUM
- DV PLI: Baschat
- DV PVIV: Baschat

- DV S/a: Baschat
- FL: ASUM, CFEF, Chitty, Eik-Nes, Hadlock, Hansmann, Jacot-Guillarmod, Jeanty, JSUM, Kurmanavicius, Lessoway, Lai_Yeo, Lessoway, Leung, Paladini, Persson, Merz, Nicolaides, O'Brien, OSAKA, Shinozuka, Siriraj, Tokyo, Verburg, WARDA, Johnsen, Medvedev, Stork, Intergrowth, WHO
- FTA: OSAKA
- FIB: Chitty, Jeanty, JFFSD, Siriraj
- FWg: Alexander
- Foot: Chitty
- GS: Hellman, Nyberg, Rempen, Tokyo
- HC: ASUM, CFEF, Chervernak, Chitty, Hadlock, Hansmann, Jacot-Guillarmod, Jeanty, Kurmanavicius, Lai_Yeo, Lessoway, Leung, Merz, Nicolaides, Paladini, Siriraj, Verburg, Johnsen, Medvedev, Stork, Intergrowth, WHO
- HL: ASUM, Chitty, Jeanty, Lai_Yeo, Merz, JFFSD, OSAKA, Paladini, Siriraj, Medvedev
- IFA: Rotten
- IVC PLI: JSUM
- Lt.Tei(ICT,IRT), Lt.Tei(a,b): Borhat
- Lung Area Left/Right: Peralta
- LV: Tokyo
- MCA CP: Ebbing
- MCA PI: Ebbing
- MCA PS: Schaffer
- MCA PI, RI: JSUM, Bahlman
- MCA PV: Mari
- MCA TAMX: Schaffer
- MAD: Eik-Nes, eSnurra, Kurmanavicius
- MNM ANGLE: de Jong-Pleij
- MV E/A: HARADA
- NBL: BUNDUKI, SONEK, Medvedev, Orlandi
- NT: Nicolaides
- OFD: ASUM, Chitty, Hansmann, Jeanty, Kurmanavicius, Merz, Nicolaides, Medvedev, Intergrowth
- MainPA Vmax: Rizzo
- RAD: Chitty, Jeanty, JFFSD, Merz, Paladini, Siriraj
- SAG. AP: Malinger
- SAG. CC: Malinger
- TAD: CFEF, Jacot-Guillarmod, Merz
- TC: Chitkara
- TCD: Goldstein, Hill, Jacot-Guillarmod, Nicolaides, Verburg
- THYR CIRC: Ranzini
- TIB: Chitty, Jeanty, JFFSD, Merz, Siriraj
- TT: Karl
- TTD: Hansmann
- TV E/A: HARADA
- TYD: Pittyanont
- ULNA. Chitty, Jeanty, JFFSD, Merz, Siriraj
- UmbArt PI: Ebbing, JSUM, Merz, Schaffer
- UmbArt RI: JSUM, Merz, Kurmanavicius, Schaffer
- UtArtPI: Gomez, Merz, Schaffer
- UtArtRI: Merz, Schaffer
- Vermis A: Malinger
- Vermis C: Malinger
- Fractional Limb Avol/Tvol: Lee

Fetal Weight Estimation (EFW)

- Campbell (AC)
- Hadlock (AC, BPD)
- Hadlock 1 (AC, FL)
- Hadlock 2 (BPD, AC, FL)
- Hadlock 3 (HC, AC, FL)
- Hadlock 4 (BPD, HC, AC, FL)
- Hansmann (BPD, TTD)
- Intergrowth (AC, HC)

- Lee (AVOL; AC, AVOL; AC, BDP, AVOL; TVOL; AC, TVOL; AC, BDP, TVOL)
- Merz (AC, BPD)
- Osaka (BPD, FTA, FL)
- Persson (BPD, MAD, FL)
- Persson 2, Schild (HC, AC, FL)
- Shepard (AC, BPD)
- Shinozuka 1 (BPD, ADTP, TTD, FL)
- Shinozuka 2 (BPD, FL, AC)
- Shinozuka 3 (BPD, APTD, TTD, LV)
- Tokyo (BPD, APTD, TTD, FL)

Gestational Age by EFW

- Hadlock, JSUM 2001, Osaka, Shinozuka, Tokyo

Fetal Weight Growth FWG

- Alexander, Ananth, Bourgogne, Brenner, Burgundy, CFEF, Doubilet, Duryea, Ego, Eik-Nes, Hadlock, Hansmann, Hansmann (86), Hobbins/Persutte, Intergrowth, Johnsen, Jsum 2001, Kramer, Persson, Osaka, Shinozuka, Tokyo, Williams, WHO, Yarkoni

Fetal Ratios

CI (BPD/OFD) (Hadlock)

FL/AC (Hadlock)

FL/BPD (Hohler)

FL/HC (Hadlock), (WHO)

HC/AC (Campbell)

Va/Hem (Nicolaidis)

Va/Hem (Hansmann)

Vp/Hem (Nicolaidis)

LHR (Peralta)

CVR (Peranteau)

Probes

C1-6-D	
XDclear Wide Band Convex Probe	
Applications	Abdomen, OB, GYN, Fetal Cardio
Max. Bandwidth (-20dB) ^{†††}	2-5 MHz
Number of Elements	192
Convex Radius	55 mm
FOV	113°
Foot Print	67.2 x 11.5 mm
Depth	Max. 50 cm
Center Frequency	3.4 MHz
B-Mode Frequency	2.00 – 2.00 MHz
Doppler Frequency	2.50 – 3.85 MHz
Harmonic Frequency	2.00 – 2.56 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

C2-9-D	
XDclear Wide Band Convex Probe	
Applications	Abdomen, OB, GYN, Pediatrics
Max. Bandwidth (-20dB) ^{†††}	3-9 MHz
Number of Elements	192
Convex Radius	43 mm
FOV	94°
Foot Print	48.0 x 9.0 mm
Depth	Max. 26 cm
Center Frequency	5.0 MHz
B-Mode Frequency	4.00 – 7.14 MHz
Doppler Frequency	3.03 – 5.00 MHz
Harmonic Frequency	2.63 – 3.57 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

IC5-9-D	
Wide Band Convex Probe	
Applications	OB, GYN, Transrectal
Max. Bandwidth (-20dB) ^{†††}	4-9 MHz
Number of Elements	192
Convex Radius	11 mm
FOV	185°
Foot Print	21.2 x 17.2 mm
Depth	Max. 16 cm
Center Frequency	5.8 MHz
B-Mode Frequency	5.00 – 9.09 MHz
Doppler Frequency	4.55 – 6.25 MHz
Harmonic Frequency	3.45 – 3.85 MHz
Biopsy Guide	Single-Angle, Reusable and disposable

11L-D	
Wide Band Linear Probe	
Applications	Small Parts, Pediatrics, MSK, Peripheral Vascular, Breast
Max. Bandwidth (-20dB) ^{†††}	4-10 MHz
Number of Elements	192
FOV	38 mm
Foot Print	46.9 x 14.4 mm
Depth	Max. 11 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	7.3 MHz
B-Mode Frequency	6.67 – 10.00 MHz
Doppler Frequency	5.26 – 7.14 MHz
Harmonic Frequency	4.55 – 5.00 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

9L-D	
Wide Band Linear Probe	
Applications	Small Parts, Pediatrics, MSK, Peripheral Vascular, OB
Max. Bandwidth (-20dB) ^{†††}	3-8 MHz
Number of Elements	192
FOV	44 mm
Foot Print	53.0 x 14.1 mm
Depth	Max. 14 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	5.5 MHz
B-Mode Frequency	4.55 – 10.00 MHz
Doppler Frequency	3.70 – 5.26 MHz
Harmonic Frequency	2.86 – 2.86 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

ML6-15-D	
Wide Band Matrix Linear Probe	
Applications	Small Parts, Peripheral Vascular, Pediatrics, MSK, Breast
Max. Bandwidth (-20dB) ^{†††}	4-13 MHz
Number of Elements	1008
FOV	50 mm
Foot Print	60.7 x 16 mm
Depth	Max. 16 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	9.0 MHz
B-Mode Frequency	8.33 – 11.11 MHz
Doppler Frequency	6.25 – 9.09 MHz
Harmonic Frequency	5.00 – 6.25 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

Probes (cont.)

L8-18i	
Wide Band Linear Probe	
Applications	Small Parts, MSK, Pediatric
Max. Bandwidth (-20dB) ^{†††}	5-14 MHz
Number of Elements	168
FOV	25 mm
Foot Print	34.8 x 11.1 mm
Depth	Max. 12 cm
B-Mode Steering Angle	7°/14°/25°
Color Doppler Steering Angle	7°/14°/25°
Center Frequency	9.5 MHz
B-Mode Frequency	7.14 – 12.50 MHz
Doppler Frequency	6.67 – 10.00 MHz
Harmonic Frequency	5.88 – 7.15 MHz

M5Sc-D	
XDclear Wide Band Phased Array Probe	
Applications	Abdominal, Cardiology, OB, Fetal Echo, Pediatrics, Cephalic
Max. Bandwidth (-20dB) ^{†††}	1-5MHz
Number of Elements	240
FOV	90°
Foot Print	27.5 x 18.1 mm
Depth	Max. 24 cm
Center Frequency	2.9 MHz
B-Mode Frequency	2.44 – 3.33 MHz
Doppler Frequency	1.85 – 2.50 MHz
Harmonic Frequency	1.61 – 2.17 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

S4-10-D	
Wide Band Phased Array Probe	
Applications	Small Parts, Cardiology, Pediatrics
Max. Bandwidth (-20dB) ^{†††}	4-9 MHz
Number of Elements	128
FOV	90°
Foot Print	20.0 x 15.0 mm
Depth	Max. 14 cm
Center Frequency	6.3 MHz
B-Mode Frequency	5.88 – 7.14 MHz
Doppler Frequency	3.85 – 6.25 MHz
Harmonic Frequency	4.00 – 4.35 MHz

RAB6-D	
Wide Band Convex Volume Probe	
Applications	Abdomen, OB, GYN, Pediatrics
Max. Bandwidth (-20dB) ^{†††}	2-8 MHz
Number of Elements	192
Convex Radius	47 mm
Volume Sweep Radius	24 mm
FOV	90° (B), 90° x 85° (Volume scan)
Foot Print	62.2 x 34.0 mm
Depth	Max. 26 cm
Center Frequency	4.7 MHz
B-Mode Frequency	3.23 – 6.67 MHz
Doppler Frequency	3.03 – 5.00 MHz
Harmonic Frequency	2.56 – 3.70 MHz

Biopsy Guide	Multi-Angle, disposable with reusable bracket
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RM7C	
XDclear Wide Band Convex Volume Probe with Active Matrix Array	
Applications	Abdomen, OB, GYN, Pediatrics, Fetal Cardio
Max. Bandwidth (-20dB) ^{†††}	2-8 MHz
Number of Elements	576
Convex Radius	50 mm
Volume Sweep Radius	22.7 mm
FOV	90° (B), 90° x 85° (Volume scan)
Foot Print	64.1 x 40.1 mm
Depth	Max. 26 cm
Center Frequency	4.9 MHz
B-Mode Frequency	4.00 – 7.14 MHz
Doppler Frequency	3.03 – 5.00 MHz
Harmonic Frequency	2.63 – 3.57 MHz

RIC5-9-D	
Wide Band Convex Volume Probe	
Applications	OB, GYN, Transrectal
Max. Bandwidth (-20dB) ^{†††}	4-9 MHz
Number of Elements	192
Convex Radius	12 mm
Volume Sweep Radius	12 mm
FOV	185°(B), 185° x 120° (Volume scan)
Foot Print	22.4 x 22.6 mm
Depth	Max. 16 cm
Center Frequency	6.6 MHz
B-Mode Frequency	5.00 – 9.09 MHz
Doppler Frequency	4.55 – 6.25 MHz
Harmonic Frequency	3.45 – 3.85 MHz
Biopsy Guide	Single-Angle, Reusable, Disposable, disposable with latex cover

RIC6-12-D	
Wide Band Convex Volume Probe	
Applications	OB, GYN, Transrectal
Max. Bandwidth (-20dB) ^{†††}	5-13 MHz
Number of Elements	256
Convex Radius	12 mm
Volume Sweep Radius	12 mm
FOV	187°(B), 187° x 120° (Volume scan)
Foot Print	22.4 (B) x 22.6 (V) mm
Depth	Max. 13 cm
Center Frequency	9.0 MHz
B-Mode Frequency	6.25 – 10.00 MHz
Doppler Frequency	6.67 – 8.33 MHz
Harmonic Frequency	5.26 – 5.56 MHz
Biopsy Guide	Single-Angle, Reusable, Disposable, disposable with latex cover

Probes (cont.)

RSP6-16-D	
Wide Band Linear Volume Probe	
Applications	Small Parts, Pediatrics, MSK, Peripheral Vascular, Breast
Max. Bandwidth (-20dB) ^{†††}	6-18 MHz
Number of Elements	192
Volume Sweep Radius	81 mm
FOV	38.4 mm (B), 38.4 mm x 29° (Volume scan)
Foot Print	48.6 x 55.9 mm
Depth	Max. 8 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	11.5 MHz
B-Mode Frequency	8.33 – 12.50 MHz
Doppler Frequency	6.25 – 8.33 MHz
Harmonic Frequency	5.26 – 5.26 MHz

eM6C G2	
Wide Band Convex Volume Probe with Active 2D Electronic Matrix Array Technology	
Applications	Abdomen, OB, GYN, Fetal Cardio
Max. Bandwidth (-20dB) ^{†††}	2-7 MHz
Number of Elements	8192
Convex Radius	53 mm
Volume Angle	90°
FOV	85° (B), 85° x 90° (Volume Scan)
Foot Print	60.3 x 32.3 mm
Depth	Max. 26 cm
Center Frequency	4.0 MHz
B-Mode Frequency	3.85 – 5.56 MHz
Doppler Frequency	2.38 – 3.57 MHz
Harmonic Frequency	2.50 – 3.85 MHz
Biopsy Guide	Multi-Angle, disposable with reusable bracket

Connectivity

External Inputs and Outputs
External Connectivity (direct access) • VGA out • Network (RJ45) • Wireless Network interface (USB) (Option) • USB 3.0 (6x) • S-Video Out 1 • HDMI
Connectivity behind rear panel (access after opening): • Audio in/Out - Left/right
Ext. Device/Remote Connections: • BW Printer via USB • Color Printer/ via USB • DVR via USB • Footswitch via USB • Wireless Network interface (USB) (Option) • RS 232: via USB to RS 232 converter (Option) • ECG (Option)
Service Tools
Data Export capabilities for Asset Performance Analytics
On-board probe quality assessment tool

Safety Conformance

The Voluson E10 is:

tested for EMC

compliant with EN55011 group 1 class A (CISPR 11 amendment 1)

compliant with IEC 60601-1-2

CE marked to Council Directive 93/42/EEC on Medical Devices

The Voluson E10 conforms to the following safety standards

IEC^{††} 60601-1 Electrical Medical Equipment

IEC^{††} 60601-1-2 Electromagnetic compatibility

IEC^{††} 60601-1-6 Usability

IEC^{††} 62304 Software Life Cycle Processes

IEC^{††} 62366 Application of usability engineering to medical devices

IEC^{††} 60601-2-37 Particular requirements for the safety of ultrasound medical diagnostic and monitoring equipment

ISO 10993 Biological evaluation of medical devices

IEC 62359 Ultrasonic - Field characterization - Test methods for the determination of thermal and mechanical indices related to medical diagnostic ultrasonic fields

WEEE (Waste Electrical and Electronic Equipment)

ROHS according to 2011/65/EU

[†]Not for sale in the USA. Not approved or cleared by the U.S. FDA. Please contact your GE Sales Representative for information about availability in your area.

^{††}Including national deviations

^{†††}Used frequencies are dependent on probe settings and parameters and are displayed on the ultrasound screen

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