

GE Healthcare

# Vivid 7 Breakthrough 2008 Release



## Product Description

The Vivid 7 Dimension is a high-performance ultrasound platform for excellent scanning, with advanced innovative capabilities, total data management, and a new level of workspace personalization.

With full integration of multi-dimensional, and grayscale and color Doppler volume imaging capabilities, the Vivid 7 Dimension increases clinical productivity of the standard adult echo exam.

The Vivid 7 Dimension system continues its development in cutting edge performance with enhancements in image quality, the addition of real time 4D color flow imaging, new clinical tools for assessing global and segmental wall motion (AFI), new quantitative capabilities for evaluating asynchrony, plus shared services vascular performance and new structured findings for reporting.

## Multi-dimensional and Volume Imaging

- 4D imaging allows real time acquisition and display of volume data in grayscale
- 4D Depth Color Render maps include four color encoded depth maps that enhance depth perception in any 4D image
- 4D Stereo Vision enables a stereoscopic image-enhancing technique to view 4D images as they were meant to be, with a new perspective on volume and dimension
- 4D color flow imaging allows real time acquisition, display and quantification of volume data with color Doppler
- Ultra Definition Clarity control one button setting to optimize 4D volumes for streamlined 4D workflow from acquisition to visualization, provides personalization of image quality from smooth to crisp resolution
- 6-slice view enables 6 simultaneous slices of color doppler data, particularly useful for quantitating flow areas
- Multi-dimensional imaging is used to acquire parasternal bi-plane and apical tri-plane views and supports 2D, color as well as Tissue Doppler modes (including Tissue Synchronization Imaging, which is part of the Advanced QScan option)
- Full volume grayscale or color flow data acquired from 4 or 6 sequential heart cycles in real time
- Slice mode allows an any plane grayscale or color flow display based on volume data
- 9-slice view: efficient access to 9 simultaneous grayscale slices, in particular useful for 9 short axis views at different levels of LV
- Easy and fast optimization of rendered 4D image display
- Enhanced 4D render representation quality

- Full M&A package can be applied to multi-dimensional and slice mode images
- The 3V probe which supports 4D, 4D color flow and multi-dimensional imaging also allows PW and CW Doppler examinations
- Contrast specific presets for 4D and multi-dimensional imaging

## 4D LV Volume Tool

“On board” 4D volume and ejection fraction tool from TomTec, customized for GE users. Now includes capabilities for including the results as part of the patient exam.

- Colorized 4D data enhances representation of rendered images
- All data can be stored in raw data DICOM format and can be recalled for post-processing
- Data management is completely integrated with EchoPAC 7 archiving system
- Multi-dimensional imaging improves workflow as well as the quality of Tissue Synchronization Imaging and stress echo studies (separate options)

## System Architecture

TruScan architecture unleashes powerful imaging capabilities for the Vivid 7.

- 3D Beamforming technology significantly improves image quality with breakthrough performance in 2D, color and Doppler imaging
- QScan imaging helps to extract more definitive diagnostic information from cardiovascular images by bringing quantitative assessment tools out of the research lab and into your routine clinical exam
- Total data management with true, raw data DICOM-networking capabilities to communicate findings and to unlock data for future quantitative analysis
- Unprecedented level of ergonomic design and comfort with productivity software that allows operators to personalize their workspace

## Data Acquisition

- Ultra Definition image acquisition, proprietary filters improve raw data before display
- Cardiac, cardiovascular, abdominal, OB/GYN, peripheral vascular and OR optimized application presets
- High-precision data acquisition
- Programmable open-ended system architecture

- Application-specific channel architecture
- 12-bit A/D converters per physical channel
- Digital data acquisition
- In addition to standard Phased Array, Doppler Probes, Flat and Curved Linear transducers, supports Active Matrix Array Sector (M4S), Flat (M12L) and Curved Linear (M7C) probes as well as the 3V for multi-dimensional and volume imaging
- Parallel data processing on four channels
- Receive focusing, aperture, apodization and frequency response are all continuously variable as a function of depth

### Data Processing

- Ultra Definition image processing smooths tissue without destroying fine detail
- TruScan architecture provides raw data management integrated into scan conversion processing
- PipeLink Technology – high-speed, parallel data bus for pre- and post-processing
- Echo data processing of phase, amplitude and frequency information
- Upgradeable for future needs
- Raw data digital replay for retro and looping allows adjustment of all major display parameters and M&A
- Selectable data compression (including compression of raw data)

## Display

### 17" LCD Monitor

- High-resolution (up to 1280 x 1024 pixels), flicker-free, 17-inch computer graphics monitor, tilt and swivel
- 16.7 million simultaneous colors available
- Scanner software supports 800 x 600 display resolution
- DVR-Digital Video Recorder allows + or - R/W format for digital replay, looping, review and M&A capability. DVD playback from any DVD player or PC
- VCR input is played back through digital replay, allowing VCR images to be looped during review and M&A capability
- Instant review screen displays 12 simultaneous loops/images for a quick study review
- Scan plane position indicator and probe temperature are displayed with all multiplane TEE probes
- Image orientation marker
- 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
- Split screen view

### Ergonomics

- Floating keyboard with lifting swivel and in/out keyboard displacement
- LCD monitor with folding arm and Independent tilt and swivel movement
- Backlit keyboard

### Display Annotations

- On-screen display of Mechanical Index (MI)
- On-screen display of Thermal Index
- Patient name/ID
- Hospital name
- Time/date
- Trackball-driven annotation arrows
- Scanning parameters
- Active mode display
- Stress protocol parameters
- Parameter annotation follow ASE standard

## Tissue Imaging

### General

- Ultra Definition imaging technology combines image acquisition and processing technology to produce an optimal image without adjusting multiple controls
- Ultra Definition Clarity and Speckle Reduce controls allow personalized image presentation from smooth to crisp
- Adaptive Reject reduces chamber noise while leaving tissue pixels
- 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
- Depth range up to 30 cm – probe specific
- Selectable grayscale Parameters: Gain, Reject, DDP and Compress – can be adjusted in live, digital replay and image clipboard recall
- Automatically calculated TGC curves require minimal operator interaction

## 2D-mode

- Sector tilt and width control
- Frame rate in excess of 600 fps, depending on probe, settings and applications
- Coded Octave Imaging with Coded Phase Inversion – 3rd generation harmonic tissue imaging providing improved lateral and contrast resolution over conventional imaging. Features reduce noise, improve wall definition, and axial resolution, making it the tissue modality of choice for all 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 key stroke optimizes immediately and automatically different grayscale settings adjusted for the real time image
- Ultra Definition Speckle Reduce Imaging – an advanced image processing technique to remove 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
- 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 improving border definition, contrast resolution, and reducing angular dependence of border or edge
- LOGIQView – 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 that is larger than what would fit in a single image
- Dual Focus – a powerful tool giving additional focal zone for excellent spatial and contrast resolution from heart base up to apical areas
- 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 performs temporal processing which reduces 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

## M-mode

- Trackball 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, all image data acquired are 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

## 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-patented techniques to boost blood echoes, and to 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
- Allows better delineation of blood flow without bleeding into tissue or vessel wall

## Color Doppler

### General

- Steerable Color Doppler available with all imaging probes – max steering angle is probe dependent
- Trackball-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 ColorFlow
- Color Invert – user selectable in live and digital replay
- Variable Color Baseline – user selectable in live and digital replay
- Multivariate Color Priority function gives reliable delineation of disturbed flows even across bright areas of the 2D-mode image
- Color Doppler frequency can be changed independently from 2D

### **Color Doppler Imaging**

- Compound imaging maintains consistent 2D image quality while in color for vascular imaging
- TruSpeed Imaging allows either ultra-high frame rate or increased lateral resolution
- Very high digital signal processing power, maintaining high frame rates with large ROIs even for very low PRF settings
- Frame Rate in excess of 100 fps, depending on probe and settings
- Variable ROI size in width and depth
- User-selectable Radial and Lateral Averaging for reduction of statistical uncertainty in the color velocity and variance estimates
- Data Dependent Processing (DDP) performs temporal processing and display smoothing with reduced possibility for 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 Multivariate Motion Discriminator reduces flash artifacts
- Dedicated coronary flow application

### **Color Angio (Color Intensity Imaging)**

- Angle-independent mode for visualization of small vessels with increased sensitivity compared to standard color flow

### **Color M-mode**

- Variable ROI length and position – user selectable
- User-selectable Radial Averaging for reduction of statistical uncertainty in the 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**

- Vingmed-patented, any plane Color M-mode display derived from Color Doppler cine loop
- Also applicable to Tissue Velocity Imaging
- M&A capability

## **Spectral Doppler**

### **General**

- Operates in PW, HPRF and CW modes
- Trackball steerable Doppler available with all imaging probes – max steering angle is probe dependent
- Selectable Doppler frequency for better 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
- Dynamic Gain Compensation for display of flows with varying signal strengths over the cardiac cycle and improved 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
- 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
- Stereo speakers mounted in the front panel
- Display annotations of frequency, mode, scales, Nyquist limit, wall filter setting, angle correction, acoustic power indices

#### **PW/HPRF Doppler**

- Automatic HPRF Doppler maintains its sensitivity even for shallow depths and with the highest PRFs
- Digital Velocity Tracking Doppler employs processing in range and time for high quality spectral displays
- Adjustable sample volume size of 1-20 mm (probe dependent)
- Maximum sample volume depth 30 cm

#### **CW Doppler**

- Highly sensitive steerable CW available with all phased array probes

## **Advanced Options**

#### **Tissue Velocity Imaging**

- Myocardial Doppler Imaging with color overlay on tissue image
- Tissue Doppler data can be acquired in background during regular 2D imaging
- Digital Velocity Profile Analysis allowing velocity and time quantification at any point and at any time during the heart cycle from digital replay or image clipboard recall
- Quantitative Segmental Wall Motion Analysis can be obtained with use of Anatomical M-mode, from digital replay or image clipboard recall
- The velocity of all 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 simplify understanding of signals in velocity traces or curved Anatomical M-mode

#### **Tissue Tracking**

- 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 (option)**

- Parametric imaging which gives information about synchronicity of myocardial motion
- Delayed myocardial segments produce red overlay whereas segments moving in normal rhythm are green
- 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 more than 100 fps
  - Efficient segment specific TSI time measurements
  - Immediate Bull's eye report
  - Automatic calculated TSI synchrony indexes
  - TSI surface mapping
  - LV synchronization report template

#### **Automated Function Imaging (option)**

- Parametric Imaging tool which gives quantitative data for global and segmental wall motion
- Allows complete assessment at a glance by combining 3 longitudinal views into one comprehensive bulls-eye view
- Integrated into M&A package with specialized report templates
- 2D strain based data moves into clinical practice

#### **Strain Rate/Strain Imaging (option)**

- Tissue deformation and rate of deformation are calculated and displayed as real-time, color-coded overlay on the 2D Image
- Tissue deformation (Strain) is 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)
- Optimized strain presets for further 2D strain analysis on EchoPAC Dimension workstation (separate research option)

#### **Intima Media Thickness (IMT) Measurement (option)**

- Automated measurement of IMT rather than the conventional way of measuring the IMT manually
- Results representative of a region rather than a single point of a vessel wall
- Reduction of examination time by providing a quick and easy procedure in measuring the IMT

#### **Contrast Imaging**

(All use of contrast agents should be used as described on the label by the contrast agent manufacturers.)

#### **LVO Contrast (option)\***

Enables contrast applications intended for imaging of the left ventricle:

- LV Contrast (3V, 3S, M4S, 5S and 6T) enhances delineation of the LV border in combination with ultrasound contrast agents. The new implementation of GE's Coded Phase Inversion (CPI) provides high resolution detection of contrast in the LV cavity and excellent suppression of myocardial tissue signals. Furthermore, tri-plane imaging with 3V using LV Contrast enables acquisition of three simultaneous apical views within one cardiac cycle
- LVO Stress (M4S), same as LV Contrast but with slightly higher frame rate to account for the higher heart rates during stress

\* Harmonic Imaging for supporting contrast agent imaging was developed by Schering

#### **Vascular/Abdominal Contrast (option)\*\***

Enables contrast applications intended for vascular and abdominal contrast imaging:

- Vascular Contrast (9L, 10L and M12L). Coded Phase Inversion enables excellent detection and resolution of vascular contrast imaging
- Abdominal Contrast (4C) – Coded Phase Inversion optimized for abdominal contrast imaging

#### **Advanced Contrast (option)\*\***

Enables contrast applications intended for research only. Diagnosis shall not be based on these applications alone.

#### **Real Time CPI (M4S)**

With improved resolution, tissue suppression and higher contrast sensitivity, obtained by utilizing the new Coded Phase Inversion mode (B-mode) intended for low power real time myocardial contrast imaging. Destruction wash-in studies are possible online or offline using "flash" and Q-analysis features. Offline ECG triggering (acquire the full cineloop) is yet another useful tool of the Real Time CPI application

#### **MC Contrast (3S, M4S, 5S and 6T) Research**

Harmonic Angio for high power triggered myocardial contrast imaging, with Dual Display for dual triggered imaging

#### **Rodent Contrast (i13L)**

With the unique combination of high frequency of i13L and our newly developed CPI we provide superior tools for small animal ultrasound research

\*\* GE Healthcare's Vivid 7 Dimension 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. Advanced contrast features are only enabled on systems for delivery in countries or regions where the agents are approved for use or for investigational or research use.

#### **Physiological Traces**

- Up to five traces display simultaneously
- ECG trigger
- ECG lead selection
- High-resolution display of the following traces: ECG, Respiration, Phono, AUX1 and Pressure/AUX2

#### **Analysis Program**

- Personalized measurement protocols allow individual set and order of M&A items
- Measurements can be labeled seamlessly by using protocols or post assignments
- Bodymark icons for location and position of probe
- Cardiac calculation package including extensive measurements and display of multiple repeated measurements
- Vascular measurements package
- Measurements assignable to protocol capability
- Parameter annotation follow ASE standard
- Measurements assignable to report generator
- Doppler Auto Trace Function with automatic calculations in both live and digital replay
- Possibility of performing Measure and Analysis on video playback

- Seamless data storage and report creation
- Measurements are summarized in worksheets – individual results can be edited or deleted
- User-assignable parameters

### **User Interface**

- Easy-to-learn user interface with intelligent keyboard
- Front panel with application-specific rotaries and push buttons for primary controls
- Application-specific secondary controls available through slide bars operated by a four-way rocker
- Slide pot TGC curve with eight pots
- Overall gain for 2D-mode, Active mode, Depth and Zoom Span on dedicated rotaries
- Digital harvesting of images and loops into image clipboard
- Patient Browser Screen for registration of demographic data and quick review of image clipboard contents
- Fully programmable user presets for probe/application default settings

### **EchoPAC 7**

- Integrated EchoPAC 7 adds connectivity and image analysis capability to Vivid 7
- Instant access to ultrasound raw data provided by the system
- Advanced Post-Processing Analysis
- MO drive (option)
- DVD writer (supports CD-R and DVD-R)
- Three user levels help organizing data security requirements

### **Image and Data Management**

- Ultimate workflow with instant access data management
- Next Generation of DICOM Image Format: raw image DICOM incorporates raw image data information with all its data management flexibility into the image communication standard DICOM
- 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 all 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
- New Structured findings report tools support efficient text entries with direct editing of findings text, usability improvements, new 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 Magneto-Optical Disk and 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
- Alphanumeric data can be exported in MS Excel compatible format
- JPEG export for still frames
- AVI and MPEG export for cineloops MPEGvue
- Using MPEGvue, exams may be stored onto removable media or on remote networked system together with integrated MPEGvue player for viewing on standard PC
- Smart email feature allows transparent transmission of images via email using resident Outlook email client
- Specialized file format “Save As” feature to allow data Import Into TomTec freestanding workstation or 4D Volume package on EPPC workstation

### **eVue (option)**

Allows interactive viewing of images, loops or full exams from remote location.

## Wideband Probes

- M4S active matrix phased array for adult echocardiography
  - Performance enhancement with improved frequency bandwidth
  - Ergonomic, soft and light, transducer cable
- Electronic selection between three solid-state connectors and one stand-alone Doppler connector solid-state probe
- Parking position for additional solid-state probes
- Biopsy support for M12L, M7C, 9L, 10L, 12L, M4S, 3S, 4C, and E8C probes
- Support for international (European) keyboard character sets (ISO 8859)

## Virus Protection

To minimize virus vulnerability Vivid 7 Dimension is configured with a minimal set of open ports and with all network services not actively used by the system closed down. This significantly reduces the risk of a virus attack on Vivid 7 Dimension.

GE 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 addresses serious issues with Vivid 7 Dimension will be made available to customers after GE verification of those patches.

PROBE	FREQUENCY RANGE	CATALOG #
<b>Volume</b>		
3V	1.5 – 4.0 MHz	H4900PC
<b>Sector</b>		
M4S (Sector)	1.5 – 4.3 MHz	H4000PA
ComfortScan 3S (Sector)	1.5 – 3.8 MHz	H4701SZ
ComfortScan 5S (Sector)	2.2 – 5.0 MHz	H40422LA
ComfortScan 7S (Sector)	2.9 – 8.0 MHz	H40422LB
10S (Sector)	3.7 – 11.5 MHz	H4901PC
<b>Transesophageal</b>		
6T (TEE)	2.7 – 7.0 MHz	H45521DX
9T (TEE)	3.1 – 10.0 MHz	H45521DY
<b>Intra-Operative Probes</b>		
i13L (Epicardiac)	5.3 – 14.0 MHz	H45511NT
i8L (Epicardiac)	3.9 – 10.0 MHz	H45511NW
<b>Linear, Convex and Others</b>		
9L (Linear)	3.0 – 10.0 MHz	H40412LT
10L (Linear)	4.0 – 10.0 MHz	H40412LG
12L (Linear)	4.9 – 13.0 MHz	H40412LH
M12L	4.9 – 14.0 MHz	H40412LD
4C (Convex)	1.6 – 5.0 MHz	H4904PC
5C (Convex)	3.0 – 6.7 MHz	H40412LA
8C	3.7 – 8.0 MHz	H40412LJ
M7C	2.9 – 7.0 MHz	H40412LC
E8C (Endocavity)	3.7 – 8.0 MHz	H40412LE
<b>Pencil</b>		
P2D (Pencil)	2.0 MHz	H4830JE
P6D (Pencil)	5.0 MHz (cw), 5.8 MHz (pw)	H4830JG

## Peripherals (options)

### Internal Peripherals

- Digital VCR (DVR) + or – R/W
- SVHS VCR
- Full control from system panel
- Frame grabber for playback
- M&A package for video measurements
- B/W video printer with control from system panel
- Color video printer with control from system panel
- USB-2 interface

### External

- Ink-jet printer
- Color laser printer

### Cart

- Low rolling resistance casters
- Brakes on front casters
- Direction of casters can be locked for flexible maneuverability
- Intelligent Fans – revolution speed is automatically adapted to the system's internal operating temperature

## Safety

Built to meet the requirements of:

- IEC60601-2-37/A1/A2:2005
- IEC60601-2-18/A1:2000
- IEC60601-1/A1/A2:1995
- IEC60601-1-2:2001
- IEC60601-1-4 /A1:1999
- IEC60601-1-6:2004
- UL60601-1:2003
- CAN/CSA C22.2 No 601.1-M90
- NEMA UD3:2004
- The European Medical Devices Directive (MDD) 93/42/EEC (CE Mark)
- The Vivid 7 ultrasound unit is a Class I device, type CF, according to Sub-clause 14 of IEC60601-1:1988
- The Vivid 7 ultrasound unit meets the EMC requirements in EN55011/A1/A2:2002 for Group 1 Class B (10 meters)

## Physical Dimensions

SIZE	METRIC	IMPERIAL
Height with 17" LCD monitor	136.0 cm	53.5 in
Width	64.0 cm	25.2 in
Depth	90.0 cm	35.4 in
Weight with 17" LCD monitor, without peripherals	179 kg	395 lbs

## Electrical Specifications

VOLTAGE (VAC)	FREQUENCY (HZ)	CURRENT (A)
100 – 120	50 – 60	10
230	50 – 60	5

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## Healthcare Re-imagined

GE is dedicated to helping you transform healthcare delivery by driving critical breakthroughs in biology and technology. Our expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, and biopharmaceutical manufacturing technologies is enabling healthcare professionals around the world to discover new ways to predict, diagnose and treat disease earlier. We call this model of care “Early Health.” The goal: to help clinicians detect disease earlier, access more information and intervene earlier with more targeted treatments, so they can help their patients live their lives to the fullest. Re-think, Re-discover, Re-invent, Re-imagine.

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imagination at work