

Specificația tehnică completată

Ultrasonografic digital cardio vascular

Model: Vivid E95; Producător: GE Helthcare si GE VINGMEND Ultrasound AS; Țara: SUA si Norvegia

Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină solicitată de către oferant
Sistem ecografic digital cardio vascular staționar clasa Expert Sistem ecografic de tip staționar APLICAȚII CLINICE general, dedicat aplicațiilor cardio vasculare, abdominale, musculoscheletale, transcraniale, părți moi, etc; PROBE PORTURI ACTIVI ≥ 4 PROBE TIP Linear/Vascular Fregventa minim între valorile de la maxim 4.0 MHz pînă la minim 18.0 MHz Adîncimea minimă de scanare de la min 1 pînă la min. 13 cm Tehnologie pentru aplicații vasculare, MSK; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale – 1 bucată Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă Phased/Cardiac Fregventa minim între valorile de la maxim 1.8 MHz pînă la minim 5.0 MHz Adîncimea minimă de scanare de la min 1 pînă la min. 27 cm Tehnologie pentru aplicații cardiologice; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Convex/Abdomen Fregventa minim între valorile de la maxim 1.9 MHz pînă la minim 6.0 MHz Adîncimea minimă de scanare de la min. 2 pînă la min. 49 cm Cîmpu de vedere /Field of View minim 70° Tehnologie pentru aplicații abdominale; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Multifrequency da Focus ajustabil: minim 8 trepte Permite lucru cu sondele fără a fi necesar procurarea unui modul pentru scanare Liniar - Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Liniar cu aplicații microcirculație și musculoschiletal (cu fregventa de virf minim 18 MHz) Convex tehnologie standarta adult și copii Phased/cardica tehnologie și Phased/Cardiac tip 4D	Sistem ecografic digital cardio vascular staționar clasa Expert DA Sistem ecografic de tip staționar DA APLICAȚII CLINICE general, dedicat aplicațiilor cardio vasculare, abdominale, musculoscheletale, transcraniale, părți moi, etc; DA PROBE PORTURI ACTIVI 5 pag. 2 din VividE 95 Data Sheet. PROBE TIP Linear/Vascular Fregventa minim între valorile de la maxim 5.0 MHz pînă la minim 18.0 MHz Adîncimea minimă de scanare de la min 1 pînă la . 12 cm Tehnologie pentru aplicații vasculare, MSK; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale – 1 bucată Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Model: L8-18i-D pag. 8 din E95 ProbeGuide. Phased/Cardiac Fregventa minim între valorile de la maxim 1.4 MHz pînă la minim 4.6 MHz DA Adîncimea minimă de scanare de la min 1 pînă la 30 cm DA Tehnologie pentru aplicații cardiologice; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale DA Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. DA Model: M5Sc-D pag. 2 din E95 ProbeGuide. Convex/Abdomen Fregventa minim între valorile de la maxim 1.4 MHz pînă la minim 6.0 MHz DA Adîncimea minimă de scanare de la min. 2 pînă la 50 cm Cîmpu de vedere /Field of View 58° DA Tehnologie pentru aplicații abdominale; minim 5 frecvențe în modul B, 3 frecvențe în armonici superioare, 3 frecvențe în armonici tisulare diferențiale DA Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Multifrequency DA Model: C1-6-D pag. 4 din E95 ProbeGuide. Focus ajustabil: minim 8 trepte DA acesta poziție depinde și de adîncimea de scanare cu cît e mai mica adîncimea de scanare cu atît avem o limită de numărul de focus Permite lucru cu sondele fără a fi necesar procurarea unui modul pentru scanare Liniar - Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Liniar cu aplicații microcirculație și musculoschiletal (cu fregventa de virf minim 18 MHz) DA Convex tehnologie standarta adult și copii DA Phased/cardica tehnologie și Phased/Cardiac tip 4D DA

Sonda Endocavitara tehnologie standarta ADINCIMEA DE SCANARE minim intre valorile 1 - 49 cm NIVELE DE GRI ≥ 256 POSTPROCESARE da IMAGINE MODURI B-mod (2D) - prezentari listati standarte de masurari incluse da B-mod (2D) - doua imagini in Modul B pot fi afisate simultan (si masuratori pot fi realizate pe aceste imagini) da M-mod- prezentari listati standarte de masurari incluse da M-mod color prezentari listati standarte de masurari incluse da M-mod sa poata fi inregistrat in memorie: minimum 8 sec. da Anatomic M-mod - prezentari listati standarte de masurari incluse da 4D cardica modul cu posibilitatea de dotare ulterioara da Harmonic imaging da DOPPLER Tip Color (CF) prezentari listati standarte de masurari incluse da Pulsativ (PW) prezentari listati standarte de masurari incluse da Continu (CW) prezentari listati standarte de masurari incluse da Tisular prezentari listati standarte de masurari incluse da Afişare frecvenţă cu posibilitatea de modificare dupa caz da Masuratori sunt posibile (timp, viteza, acceleratie, contur velocitati, ritm cardiac, etc) da Volum ajustabil da Balanta L/R pentru sunet ajustabila da Linia de baza este ajustabila pentru CF si PW da Analiza automata doppler spectral da Scanare oblica cu unghi ajustabil da Doppler tisular (TDI) pentru mod B si mod M da Posibilitate pentru afisaj color de inalta definitie da Persistenta si senzitivitate ajustabile da Optimizare automata a scarii si liniei de baza da Vizualizare in mod dual pentru imaginea in Modul B si cea Doppler da Posibilitate upgradare cu mod de lucru Panoramic da Power Doppler da Duplex da Triplex da FUNCTİONALITĂȚI INCLUSE Măsurători digitale da Diapazon dinamic selectabil da Focalizare de transmisie ajustabilă da Focalizare de recepție dinamică da Butoane STC disponibile pentru ajustarea gain-ului minim 8 verticale si minim 8 orizontale valabile pe touch monitor da Măsurători pe reluarea video da Masuratori posibile (lungime, suprafata, volum, hip-angle etc) da Tehnologie de lucru in regim non doppler pentru studiu circulatie sagvine indiferent de vitezele de curgere care sint prezente (Exemplu B-Flow) da Tehnologie de marire a imaginii fara a pierde din calitatea	Sonda Endocavitara tehnologie standarta DA ADINCIMEA DE SCANARE minim intre valorile 1 - 50 cm DA NIVELE DE GRI ≥ 256 DA POSTPROCESARE DA IMAGINE MODURI B-mod (2D) - prezentari listati standarte de masurari incluse DA B-mod (2D) - doua imagini in Modul B pot fi afisate simultan (si masuratori pot fi realizate pe aceste imagini) DA M-mod- prezentari listati standarte de masurari incluse DA M-mod color prezentari listati standarte de masurari incluse DA M-mod sa poata fi inregistrat in memorie: minimum 8 sec. DA Anatomic M-mod - prezentari listati standarte de masurari incluse DA 4D cardica modul datat deja DA Harmonic imaging DA DOPPLER Tip Color (CF) prezentari listati standarte de masurari incluse DA Pulsativ (PW) prezentari listati standarte de masurari incluse DA Continu (CW) prezentari listati standarte de masurari incluse DA Tisular prezentari listati standarte de masurari incluse DA Afişare frecvenţă cu posibilitatea de modificare dupa caz DA Masuratori sunt posibile (timp, viteza, acceleratie, contur velocitati, ritm cardiac, etc) DA Volum ajustabil DA Balanta L/R pentru sunet ajustabila DA Linia de baza este ajustabila pentru CF si PW DA Analiza automata doppler spectral DA Scanare oblica cu unghi ajustabil DA Doppler tisular (TDI) pentru mod B si mod M DA Posibilitate pentru afisaj color de inalta definitie DA Persistenta si senzitivitate ajustabile DA Optimizare automata a scarii si liniei de baza DA Vizualizare in mod dual pentru imaginea in Modul B si cea Doppler DA Posibilitate upgradare cu mod de lucru Panoramic DA Power Doppler DA Duplex DA Triplex DA FUNCTİONALITĂȚI INCLUSE Măsurători digitale DA Diapazon dinamic selectabil DA Focalizare de transmisie ajustabilă DA Focalizare de recepție dinamică DA Butoane STC disponibile pentru ajustarea gain-ului minim 8 verticale si minim 8 orizontale valabile pe touch monitor DA Măsurători pe reluarea video DA Masuratori posibile (lungime, suprafata, volum, hip-angle etc) DA Tehnologie de lucru in regim non doppler pentru studiu circulatie sagvine indiferent de vitezele de curgere care sint prezente (Exemplu B-Flow) DA Tehnologie de marire a imaginii fara a pierde din calitatea
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sau rezolutia imaginii. (Exemplu HD Zoom) da Inversare Stanga/Dreapta trebuie sa fie posibila da Mod masurare automa a grosimei vasului sagvin (IMT) da Mod de masurare Strain rate Ventriculul sting da Ventriculul Drept da Atriu sting da Bucla Cine disponibila da Afisare duala a imaginilor din memoria CINE este posibila da Cel putin 3 frecvente in mod THI da Cel putin 3 frecvente in regim diferential THI da Tehnologia "Compound scanning" da Control unghiului de scanare Minim pentru sonda cardio da Sistemul trebuie sa permita vizualizarea microvasculara cu flux redus da Sistemul trebuie sa dispuna de aplicatie pentru vizualizare avansata a microcalcinatelor da Tehnologie pentru crea unui cimp de scanare trapezoidal pentru sonda liniara, sau convex deplin pentru sonda cardio (Exemplu Virtual Convex) da FUNCTIE RAPORTARE Sistemul poate crea rapoarte automat da Posibilitate editare raport final de catre utilizator da Posibilitate printare rapoarte da Posibilitate export rapoarte in format PDF da FUNCȚIONALITĂȚI OPTIONALE CE POT FI PROCURATE SEPART DE BENIFICIAR Regim dopler de prezetare a directie curgerii sagvine (Exemplu de tehnologie BSI) da Prezentarea tuturor posibilitatilor pentru tehnologia de 4D cu lista softurilor optionale, si masuratorilor care pot fi realizate. Da Prezenta tehnologie de postprocesare pentru Mod 4D, cu posibilitate de crearea a imaginii de inalta rezolutie control lumini, textura, taiere a elementelor care creaza umbra. da 3D Speckle tracking-monitorizarea miscarii peretelui cardiac in volum tridimensional da Mod de lucru Elastografie prin Shear Vawe da Posibilitate de ajustare/selectare a hartilor pentru imaginea Strain da Modificarea dimensiunii regiunii de interes in interiorul careia se masoara rigiditatea da Mod de lucru Stress Echo da Functie de confirmare pentru playback automat da Functie de afisare imagini de referinta da Functie de cuantificare pentru miscarea peretelui da Modul de lucru cu agenti de contrast da Posibilitatea de upgrade cu modul pentru lucru cu agenti de	sau rezolutia imaginii. (Exemplu HD Zoom) DA Inversare Stanga/Dreapta trebuie sa fie posibila DA Mod masurare automa a grosimei vasului sagvin (IMT) DA Mod de masurare Strain rate Ventriculul sting DA Ventriculul Drept DA Atriu sting DA Bucla Cine disponibila DA Afisare duala a imaginilor din memoria CINE este posibila DA Cel putin 3 frecvente in mod THI DA Cel putin 3 frecvente in regim diferential THI DA Tehnologia "Compound scanning" DA Control unghiului de scanare Minim pentru sonda cardio DA Sistemul trebuie sa permita vizualizarea microvasculara cu flux redus DA Sistemul trebuie sa dispuna de aplicatie pentru vizualizare avansata a microcalcinatelor DA Tehnologie pentru crea unui cimp de scanare trapezoidal pentru sonda liniara, sau convex deplin pentru sonda cardio (Exemplu Virtual Convex) DA FUNCTIE RAPORTARE Sistemul poate crea rapoarte automat DA Posibilitate editare raport final de catre utilizator DA Posibilitate printare rapoarte DA Posibilitate export rapoarte in format PDF DA FUNCȚIONALITĂȚI OPTIONALE CE POT FI PROCURATE SEPART DE BENIFICIAR Regim dopler de prezetare a directie curgerii sagvine (Exemplu de tehnologie BSI) DA Prezentarea tuturor posibilitatilor pentru tehnologia de 4D cu lista softurilor optionale, si masuratorilor care pot fi realizate. Da Lista pag 3 din VividE 95 Data Sheet. 4D Auto AVQ: Automated 4D aortic annulus quantification (dimension, area, circumference) • 4D strain and 4D LV Mass • 4V enable (required to run 4V-D probe) • HDlive • 4D Auto MVQ • 4D Auto RVQ • Polarized stereo vision • View-X Prezenta tehnologie de postprocesare pentru Mod 4D, cu posibilitate de crearea a imaginii de inalta rezolutie control lumini, textura, taiere a elementelor care creaza umbra. DA 3D Speckle tracking-monitorizarea miscarii peretelui cardiac in volum tridimensional DA Mod de lucru Elastografie prin Shear Vawe NU este valabil pentru USG de tip generala. Posibilitate de ajustare/selectare a hartilor pentru imaginea Strain NU Modificarea dimensiunii regiunii de interes in interiorul careia se masoara rigiditatea NU Mod de lucru Stress Echo DA Functie de confirmare pentru playback automat DA Functie de afisare imagini de referinta DA Functie de cuantificare pentru miscarea peretelui DA Modul de lucru cu agenti de contrast DA Posibilitatea de upgrade cu modul pentru lucru cu agenti de
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contrast atat in mod B cat si mod Color da Funcție de ajustare pentru Frame Rate da Postprocesare a imaginilor pe o statie de lucru de la producatorul echipamentului (Exemplu Echo pack) da TRANSDUCTORI "Sistemul are posibilitatea cuplării unui transductor convex (active Single cristal/ Matricial/ XDclear s-au analogic) pentru aplicatii generale ce accepta dispozitiv de biopsie" da Sistemul are posibilitatea cuplării unui transductor linear (active Single cristal/ Matricial/ XDclear s-au analogic) cu aplicatii in vizualizare parti mici si tesuturi moi da Sistemul are posibilitatea cuplării unui transductor linear matricial de inalta frecventa: minim 30 MHz da Sistemul are posibilitatea cuplării unui transductor convex 4D da Sistemul are posibilitatea cuplării unui transductor liniar 4D da Sistemul are posibilitatea cuplării unui transductor endocavitar 4D da Sistemul are posibilitatea cuplării unui transductor phased array pentru aplicatii cardiace 4D da Sistemul are posibilitatea cuplării unui transductor trans-esofagian da Sistemul are posibilitatea cuplării unor transductori tip creion da Transductori multifrecventionali, minim 12 frecvente, atit in armonici tisulare cit si diferentiale da PAN/ZOOM imagine în timp real da imagine înghețată da imagine salvata da STOCARE IMAGINI Capacitate hard disc, tip SSD $\geq$ 500Gb Cine memorie $\geq$ 950 Mb dupa numarul de cicluri da dupa timpul de scanre da control timpului maxim de salvare da Sistemul trebuie sa dispuna de sistem de achizitie a datelor in format "Raw Data" pentru o prelucrare ulterioara a imaginilor da Stocarea pe DVD sa poata fi realizata in urmatoarele formate: DICOM, JPG, BMP, AVI da DICOM 3.0 da Trebuie sa existe posibilitatea pentru Dicom Storage SCU da Trebuie sa existe posibilitatea pentru Dicom Print SCU da Trebuie sa existe posibilitatea pentru Dicom Storage Commitment SCU, (Optional, cu posibilitatea de dotare ulterior) da Posibilitatea de conectare a unei statii de lucru (Optional, cu posibilitatea de dotare ulterior) da MONITOR FIZIOLOGIC ECG Cablu ECG inclus adult da PACHETE DE ANALIZĂ Cardiac da Vascular da Abdomen da	contrast atat in mod B cat si mod Color DA Funcție de ajustare pentru Frame Rate DA Postprocesare a imaginilor pe o statie de lucru de la producatorul echipamentului (Exemplu Echo pack) DA TRANSDUCTORI "Sistemul are posibilitatea cuplării unui transductor convex (active Single cristal/ Matricial/ XDclear s-au analogic) pentru aplicatii generale ce accepta dispozitiv de biopsie" DA Sistemul are posibilitatea cuplării unui transductor linear (active Single cristal/ Matricial/ XDclear s-au analogic) cu aplicatii in vizualizare parti mici si tesuturi moi da Sistemul are posibilitatea cuplării unui transductor linear matricial de inalta frecventa: minim 30 MHz NU pentru ca este in contractidoriu cu specificatia demia sus. Sistemul are posibilitatea cuplării unui transductor convex 4D NU Sistemul are posibilitatea cuplării unui transductor liniar 4D NU Sistemul are posibilitatea cuplării unui transductor endocavitar 4D NU Sistemul are posibilitatea cuplării unui transductor phased array pentru aplicatii cardiace 4D DA Sistemul are posibilitatea cuplării unui transductor trans-esofagian DA Sistemul are posibilitatea cuplării unor transductori tip creion DA Transductori multifrecventionali, minim 12 frecvente, atit in armonici tisulare cit si diferentiale DA PAN/ZOOM imagine în timp real DA imagine înghețată DA imagine salvata DA STOCARE IMAGINI Capacitate hard disc, tip SSD - 500Gb DA Cine memorie - 8000 Mb din care 500 Mb minimu il foloseste pentru cine memorie pentru imaginii cu reconstructie CINE memorie creste. dupa numarul de cicluri DA dupa timpul de scanare DA control timpului maxim de salvare DA Sistemul trebuie sa dispuna de sistem de achizitie a datelor in format "Raw Data" pentru o prelucrare ulterioara a imaginilor DA Stocarea pe DVD sa poata fi realizata in urmatoarele formate: DICOM, JPG, BMP, AVI DA DICOM 3.0 DA Trebuie sa existe posibilitatea pentru Dicom Storage SCU DA Trebuie sa existe posibilitatea pentru Dicom Print SCU DA Trebuie sa existe posibilitatea pentru Dicom Storage Commitment SCU, (Optional, cu posibilitatea de dotare ulterior) DA Posibilitatea de conectare a unei statii de lucru (Optional, cu posibilitatea de dotare ulterior) DA MONITOR FIZIOLOGIC ECG Cablu ECG inclus adult DA PACHETE DE ANALIZĂ Cardiac DA Vascular DA Abdomen DA
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General da Musculoscheletal da Transcranial da Parți moi da Altele Să se indice MONITOR VIZUALIZARE, pliabil Diagonala ≥ 23 inch Rezolutia minim 1920x1080px, (FULL HD) Unghi de vizualizare ≥ 175 grade Luminozitate $\geq 300\text{cd/m}^2$ Pe brat articulată da Posibilitate de blocare a bratului articulată al monitorului da DIVIZARE MONITOR da MONITOR DE CONTROL, touch-screen Diagonala ≥ 12 inch Rezolutie touch monitor $\geq 1280 \times 800$ pixel PLATFORMA DE CONTROL Miscările stînga și dreapta da sus și în jos, motorizat da Unitatea este echipată cu suport pentru cablurile transductorilor da Unitatea trebuie să dispună de sistem de încălzire pentru gel da Unitatea are funcția de "Standby" da Unitatea trebuie să aibă posibilitatea de conectare a unui monitor extern da Unitatea este echipată cu conector pentru sonda creion da Alimentarea 220/230 V - 50/60 Hz da "UPS integrat sau separat destinat pentru menținerea funcționării dispozitivului în caz de stingere a luminei accidentale" da, min. 20 min. Inscriptor DVD RW da Imprimantă alb/negru - 1 bucată da Iesirile sistemului: Conector USB pentru salvarea imaginilor direct pe stick de memorie sau HDD extern – minim 4 porturi USB da Iesire video S-VHS sau DVI-D da Ethernet 100BaseTX da Conector SATA pentru hard-disk da Ecograful să fie pe roți cu posibilitate de blocare a frinelor pentru fiecare roată separată da "Echipamentul trebuie să îndeplinească toate condițiile legale pentru punerea pe piață – se vor prezenta următoarele documente: - Certificate de calitate ISO 9001 - Certificate de calitate ISO 13485 - CE, Declarație de conformitate Toate certificatele și autorizațiile trebuie să fie în termen de valabilitate." da "Perioadă de garanție: minim 24 luni de la punerea în funcțiune pentru echipament și sonde. Se va anexa o declarație în acest sens." da Instruirea personalului operator se efectuează la beneficiar, în locația de livrare min. 2 persoane "Producătorul trebuie să furnizeze piese de schimb, cel puțin 10 ani de la data livrării. Se va anexa o declarație în acest sens." da	General DA Musculoscheletal DA Transcranial DA Parți moi DA Altele Să se indice MONITOR VIZUALIZARE, pliabil Diagonala ≥ 23 inch DA Rezolutia minim 1920x1080px, (FULL HD) DA Unghi de vizualizare ≥ 175 grade bDA Luminozitate $\geq 300\text{cd/m}^2$ bDA Pe brat articulată DA Posibilitate de blocare a bratului articulată al monitorului DA DIVIZARE MONITOR DA MONITOR DE CONTROL, touch-screen Diagonala ≥ 12 inch DA Rezolutie touch monitor - 1280x800 pixel DA PLATFORMA DE CONTROL Miscările stînga și dreapta DA sus și în jos, motorizat DA Unitatea este echipată cu suport pentru cablurile transductorilor DA Unitatea trebuie să dispună de sistem de încălzire pentru gel DA Unitatea are funcția de "Standby" DA Unitatea trebuie să aibă posibilitatea de conectare a unui monitor extern DA Unitatea este echipată cu conector pentru sonda creion DA Alimentarea 220/230 V - 50/60 Hz DA "UPS integrat sau separat destinat pentru menținerea funcționării dispozitivului în caz de stingere a luminei accidentale" DA, min. 20 min. DA Inscriptor DVD RW DA Imprimantă alb/negru - 1 bucată DA Iesirile sistemului: Conector USB pentru salvarea imaginilor direct pe stick de memorie sau HDD extern – 4 porturi USB DA Iesire video HDMI DA Ethernet 100BaseTX DA Conector SATA pentru hard-disk DA intern Ecograful să fie pe roți cu posibilitate de blocare a frinelor pentru fiecare roată separată DA "Echipamentul trebuie să îndeplinească toate condițiile legale pentru punerea pe piață – se vor prezenta următoarele documente: DA - Certificate de calitate ISO 9001 DA - Certificate de calitate ISO 13485 DA - CE, Declarație de conformitate DA Toate certificatele și autorizațiile trebuie să fie în termen de valabilitate." DA "Perioadă de garanție: minim 24 luni de la punerea în funcțiune pentru echipament și sonde. Se va anexa o declarație în acest sens." DA Instruirea personalului operator se efectuează la beneficiar, în locația de livrare min. 2 persoane DA "Producătorul trebuie să furnizeze piese de schimb, cel puțin 10 ani de la data livrării. DA Se va anexa o declarație în acest sens." DA
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Vivid™ E95

Probe guide

Vivid E95 offers a broad range of probes to help achieve extraordinary images for cardiac, vascular, abdominal, pediatric, neonatal, fetal heart, obstetric, gynecologic, urological, transcranial and small parts applications.



[▶ More](#)

Sector



M5Sc-D†



6S-D



12S-D

Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Cardiac, Pediatric Abdomen, Fetal Heart, Transcranial, Coronary, Stress, Contrast Low MI, LVO Stress, LVO Contrast†	XDclear™ Active Matrix Single Crystal Phased Array Transducer	18 X 27 mm	Multi-angle disposable with a reusable bracket	1.4–4.6 MHz	120°	30 cm
Pediatric, Cardiac, Coronary, Neonatal Head, Abdominal, Fetal Heart, Neonatal	Phased Array Transducer	17 X 24 mm		2.4–8.0 MHz	115°	16 cm
Pediatric, Cardiac, Coronary, Neonatal Head, Neonatal	Phased Array Transducer	13 X 18 mm		4.0–12.0 MHz	105°	12 cm

† GE Healthcare's Vivid E95 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.

Linear



9L-D†



11L-D

Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Vascular, Musculoskeletal, Thyroid, Contrast†, Abdominal	Linear Array Transducer	14 X 53 mm	Multi-angle disposable with a reusable bracket	2.4–10.0 MHz	45 mm	12 cm
Vascular, Breast, Small Parts, Musculoskeletal, Thyroid, Scrotal	Linear Array Transducer	13 X 47 mm	Multi-angle disposable with a reusable bracket	4.5–12.0 MHz	39 mm	8 cm

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Convex

	Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
 C1-6-D†	Abdomen, OB/GYN, Urology, Vascular, Fetal Heart, Contrast†	XDclear Curved Array Transducer	16 X 70 mm	Multi-angle disposable with a reusable bracket	1.4–6.0 MHz	58°	50 cm
 C2-9-D	Abdomen, OB/GYN, Urology, Fetal Heart	XDclear Curved Array Transducer	14 X 51 mm	Multi-angle disposable with a reusable bracket	2.3–8.4 MHz	65°	30 cm
 8C	Abdomen, Vascular, Neonatal Head	Tightly Curved Array Transducer	12 X 22 mm	N/A	4.0–8.0 MHz	128°	30 cm
 iC5-9-D	OB/GYN, Urology, Fetal Heart	Tightly Curved Array Transducer	17 X 21 mm	Single-angle disposable bracket	3.3–8.6 MHz	128°	30 cm
 C3-10-D	Neonatal Head, Musculoskeletal, Conventional, Vascular, Abdomen	XDclear Tightly Curved Array Transducer	12 X 22 mm	N/A	3.0–10.0 MHz	95°	14 cm

† GE Healthcare's Vivid E95 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.

Doppler



Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Cardiac	Pencil Transducer			2.0 MHz		
Vascular	Pencil Transducer			6.3 MHz		

Volume



4V-D

Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Cardiac, LVO Contrast, Stress, Fetal Heart, Coronary, LVO Stress, Pediatrics	Active Matrix 4D Volume Phased Array Transducer	24 X 21 mm		1.5–4.0 MHz	90°	30 cm

Transesophageal[‡]



Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Cardiac, LVO Contrast, Coronary	Active Matrix 4D Volume TEE Transducer	Tip 14.3 X 12.7 mm Length 44.8 mm		3.0–8.0 MHz	90°	20 cm
Cardiac, Coronary	TEE Transducer	Tip 12 X 14 mm Length 45 mm		3.0–8.0 MHz	90°	20 cm
Pediatric	TEE Transducer	Tip 10.9 X 8.4 mm Length 35.2 mm		3.0–10.0 MHz	90°	14 cm

[‡] 6Tc-RS, 9T-RS are supported via RS transducer adapter.

More

Intraoperative



L8-18i-D

Applications	Description	Footprint	Biopsy Guide	Bandwidth	Field of View	Depth of Field
Cardiac, Vascular, Small Parts, Musculoskeletal	Linear IO Transducer	11 X 35 mm		5.0–18.0 MHz	25 mm	12 cm

About GE Healthcare

GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. GE (NYSE: GE) works on things that matter - great people and technologies taking on tough challenges. From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients.

Imagination at work

GE Healthcare
9900 Innovation Drive
Wauwatosa, WI 53226
USA

www.gehealthcare.com



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JB48150XX



Product Service

EC Certificate

Full Quality Assurance System

Directive 93/42/EEC on Medical Devices (MDD), Annex II excluding (4)
(Devices in Class IIa, IIb or III)

No. G1 16 03 23782 082

Manufacturer:**GE Vingmed Ultrasound A/S**

Strandpromenaden 45
3191 Horten
NORWAY

**Facility(ies):**

GE Vingmed Ultrasound A/S
Strandpromenaden 45, 3191 Horten, NORWAY

**Product
Category(ies):**

**Diagnostic Ultrasound Systems, related
Ultrasound Probes and Standalone
Software for Ultrasound-Image Processing**

The Certification Body of TÜV SÜD Product Service GmbH declares that the aforementioned manufacturer has implemented a quality assurance system for design, manufacture and final inspection of the respective devices / device categories in accordance with MDD Annex II. This quality assurance system conforms to the requirements of this Directive and is subject to periodical surveillance. For marketing of class III devices an additional Annex II (4) certificate is mandatory. See also notes overleaf.

Report No.:

713080867

Valid from:

2016-09-02

Valid until:

2021-09-01

Date, 2016-06-09

Stefan Preiß



TÜV SÜD Product Service GmbH is Notified Body with identification no. 0123

Page 1 of 1



DECLARATION OF CONFORMITY

Following the provisions of the medical devices directive 93/42/EEC,
and of the directive 2011/65/EU.

We

Manufacturer:
GE Vingmed Ultrasound AS
Strandpromenaden 45,
3191 Horten, Norway

Declare under our sole responsibility that the class IIa device:

Vivid E95, Vivid E90, Vivid E80

Ultrasound system, Imaging, Cardiovascular

Software version: **201**

Ref.: See attached addendum.

GMDN Code: **40763**

UMDNS Code: **17-422**

Classification rule (93/42/EC Annex IX): **10**

To which this declaration relates is in conformity with the requirements of the medical devices directive 93/42/EEC, which apply to it and with the requirements of the directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

This conformity is based on the following elements:

- Information included in the technical documentation, ref Technical File **DOC1605870**, of the products to which this declaration relates.
- EC certificate: approval of full quality assurance system (annex II w/o (4) of the medical devices directive 93/42 EEC) delivered by TÜV SÜD Product Service GmbH, Ridlerstrasse 65, 80339 Munich, Germany (Notified Body 0123), Certificate N° G1 16 03 23782 082, issued on June 09. 2016.

List of harmonized standards applied for CE marking according to Directive 93/42/EEC:
Medical electrical equipment, general requirements for safety, EN 60601-1:2006 + A1:2013
Medical electrical equipment, part. requirements for ultrasonic equipm, EN 60601-2-37:2008 +A11:2011
Medical electrical equipment, collateral standard, EN 60601-1-2:2007 +AC:2010
Medical electrical equipment, collateral standard, EN 60601-1-6:2010
Medical devices, application of usability engineering to medical devices, EN 62366:2008
Medical Device Software, Software lifecycle process, EN 62304:2006 +AC:2008
Information supplied by the manufacturer of medical devices, EN 1041:2008
Symbols for use in the labeling of medical devices, EN ISO 15223-1:2016

Horten, January 22. 2018


Jan Tore Thollefsen
Regulatory Affairs Manager

This EC declaration of conformity for Vivid E95, Vivid E90 and Vivid E80, replaces the previous dated 23. November 2017.



ADDENDUM TO THE EC DECLARATION OF CONFORMITY dated January 22. 2018
Vivid E95, Vivid E90, Vivid E80 (v201) – Product, options list and I/O

CONSOLE Name / with description	GE Vingmed Part # ^[1]	GEMS Cat # ^[2]
Vivid E95	GC000220	H45581DA
Vivid E90	GC000235	H45581LB
Vivid E80	GC000240	H45581DC

OPTIONS CONSOLS	GEMS Cat # ^[2]	Vivid E95	Vivid E90	Vivid E80
Vascular Contrast	H45561MZ	O	O	O
Adv. Contrast Imaging	H45571GY	O	O	O
AFI Productivity Package	H45561GX	O	O	O
IMT	H45561GY	O	O	O
LV Mass Only	H45561NA	O	-	-
4D Strain and LV Mass	H45561NB	O	-	-
4D Auto AVQ	H45581CL	O	-	-
Stress	H45561NC	O	O	O
Auto 2D EF	H45561ND	O	O	O
4V Enable	H45561RJ	O	-	-
Advanced Qscan Imaging	H45561RK	O	O	O
MV Assessment (Tomtec)	H45581LT	O	-	-
RV Volume (TomTec)	H45581GH	O	-	-
4D PolarVision, Vivid Exx	H45571HA	O	-	-
Aurora Advanced Bundle	H45581EF	O	O	O
TEE Interface Module	H45571FK	X	X	O
Quantitative Analysis Package	H45571FL	X	X	O
Tissue Tracking	H45571FM	X	X	O
MPEGVue and eVue	H45571FN	X	X	O
Scan Assist Pro	H45571FP	X	X	O
DICOM Connectivity Package	H45571FR	X	X	O
HDlive	H45581EG	O	-	-
AFI Stress	H45581EH	O	O	O
DICOM viewer	H45581EJ	O	O	O
6VT biplane/triplane option	H45581EK	X	O	-

I/O ^[3]	GEMS Cat # ^[2]	Vivid E95	Vivid E90	Vivid E80
ECG cable, adult, AHA	H45571PY	X	X	X
ECG lead set, adult, AHA	H45571PZ	X	X	X
ECG cable, adult, IEC	H45571RA	X	X	X
ECG lead set, adult, IEC	H45571RB	X	X	X
ECG Cable set	H45521AL	X	X	X
ECG cable, neo, AHA	H45571RD	X	X	X
ECG cable, neo, IEC	H45571RE	X	X	X
Lead/electr neo AHA 600	H45571RJ	X	X	X
Lead/electr neo IEC 600	H45571RK	X	X	X
Adapter, ECG 3-lead	H45571RL	X	X	X

Legend used :

- X Available as standard with this Ultrasound Console
- O Optionally available with this Ultrasound Console
- Not available with this Ultrasound Console.

Notes used in the table :

1. GE Vingmed Part # identifies the device(s) in the manufacturer's design, manufacturing and service documentation. It is usually affixed to the device(s) in the form of a product identification or rating label.
2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. I/O-devices may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.

Horten, January 22. 2018

Jan Tore Thollefsen
 Regulatory Affairs Manager



Vivid E95, Vivid E90, Vivid E80 (v201) – Probes with accessories

PROBES w. Accessories ^[3]	TYPE ^[4]	GEHC Cat # ^[2]	Vivid E95	Vivid E90	Vivid E80
4V-D	BF	H4001BT	O	-	-
M5Sc-D	BF	H44901AE	O	O	O
6S-D	BF	H45021RR	O	O	O
12S-D	CF	H45021RT	O	O	O
9L-D	BF	H40442LM	O	O	O
11L-D	BF	H40432LN	O	O	O
C1-6-D	BF	H40472LT	O	O	O
C2-9-D	BF	H40462LN	O	O	O
8C	BF	H40412LJ	O	O	O
iC5-9-D	BF	H40442LK	O	O	O
L8-18i-D	BF	H40452LL	O	O	O
6Tc	BF	H455512D	O	O	O
6Tc-RS ^[5]	BF	H455512E	O	O	O
6VT-D	BF	H45581BJ	O	O	O
9T	BF	H45521DY	O	O	O
9T-RS ^[5]	BF	H45531YM	O	O	O
P2D	BF	H4830JE	O	O	O
P6D	BF	H4830JG	O	O	O
TEE Cleaning and Storing System	N/A	H45551NK	O	O	O
TEE Storage Rack	N/A	H45551NM	O	O	O
TEE PROBE ADAPTER FOR 6T-RS/9T-RS	N/A	H45541PX	O	O	O
TEE Scanhead Protection Cover	N/A	H45521CK	O	O	O
Scanhead protection, adult, 25pcs	N/A	H45551MS	O	O	O
Ped TEE Scanhead Protection Cover	N/A	H45541RN	O	O	O
Scanhead protection, pediatric, 25pcs	N/A	H45551MT	O	O	O
TEE Clip-On Bite Guard Adult	N/A	H45511EE	O	O	O
Clip-On Bite Guard, 25pcs	N/A	H45551MM	O	O	O
TEE Clip-On Bite Guard Adult OR	N/A	H45521CB	O	O	O
Clip-On Bite Guard OR, 25pcs	N/A	H45551MN	O	O	O
TEE Conventional Bite Guard Adult	N/A	H45521JH	O	O	O
Bite Guard adult, 25pcs	N/A	H45551MR	O	O	O
TEE Conventional Bite Guard Ped.	N/A	H45521JG	O	O	O
Bite Guard pediatric, 25pcs	N/A	H45551MP	O	O	O
Bite Hole Indicator	N/A	H45531HS	O	O	O
Multiangle replacement kit (x24)	N/A	E8385RC	O	O	O
C1-6-D Biopsy bracket	N/A	H4913BB	O	O	O
C2-9-D Biopsy bracket	N/A	H4913BA	O	O	O
iC5-9-D Needle guide	N/A	E8385MJ	O	O	O
9L Bio guide starter kit	N/A	H4906BK	O	O	O
12L-RS / 11L-D Multi biopsy guide	N/A	H40432LC	O	O	O
M5Sc-D Biopsy kit	N/A	H45561FC	O	O	O

Legend used :

- X Available as standard with this Ultrasound Console
- O Optionally available with this Ultrasound Console
- Not available with this Ultrasound Console

Notes :

2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. Probes and accessories may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.
4. Type identifies the degree of protection against electric shock for each probe, as labeled on the probe itself.
5. The probes 6Tc-RS and 9T-RS can only be used on Vivid E95/E90/E80 when used together with the TEE Probe Adapter -RS, H45541PX. The adapter itself is not an applied part.

Horten, January 22. 2018


Jan Tore Thollefsen
Regulatory Affairs Manager

**Vivid E95, Vivid E90, Vivid E80 (v201)- Accessories and Upgrades**

ACCESSORIES ^[3]	GEHC Cat # ^[2]	Vivid E95	Vivid E90	Vivid E80
Tripedal footswitch	H46732LF	O	O	O
B&W printer, digital with USB	H45531HK	O	O	O
Color Laser Printer 220V	H45541MJ	O	O	O
Color Video Printer	H45561AA	O	O	O
USB Memory Key 32GB	H45581NA	O	O	O
External USB hard disk, 2TB	H45571YW	O	O	O
External Digital Video Stream Recorder	H45581EL	O	O	O
Protective Cover Vivid Expert	H45551NJ	O	O	O
Stereo Glasses for 3D visualization, Set	H45551MH	X	O	-
Spectacle Casing	H45551MJ	O	O	O
Anacrome 3D glasses	H45551MK	X	O	-
Anacrome 3D glasses Clip-On Flips	H45551ML	X	O	-
RealD 038 3D Glasses	H45571YR	O	O	-
RealD 04 Clip-on 3D Glass	H45571YS	O	O	-
Sony 3D monitor kit	H45581AT	O	-	-
Optical Isolation cable	H45571SA	O	O	O
Vivid Exx DVD Option	H45581NB	O	O	O

UPGRADES ^[4]	GEHC Cat # ^[2]	Vivid E95	Vivid E90	Vivid E80
Vivid E90 4D upgrade	H45581EM	-	O	-
Vivid E80 4D upgrade	H45581NY	-	-	O

Legend used:

- X Available as standard with this Ultrasound Console
- O Optionally available with this Ultrasound Console
- Not available with this Ultrasound Console

Notes:

2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. Accessories may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.
4. UPGRADES are items available for aftermarket sales. An upgrade may include and enable functionality which is identified as being "Not available" for the initial production and sale of the same model.

Horten, January 22. 2018


Jan Tore Thollefsen
Regulatory Affairs Manager



DECLARATION OF CONFORMITY

Following the provisions of the medical devices directive 93/42/EEC, Annex II, and of the radio equipment directive 2014/53/EU, annex II, and of the RoHS directive 2011/65/EU.

We

Manufacturer:
GE Vingmed Ultrasound AS
Strandpromenaden 45,
3191 Horten, Norway

Declare under our sole responsibility that the class IIa device:

Vivid E95, Vivid E90, Vivid E80

Ultrasound system, Imaging, Cardiovascular

Software version: **202**

Ref.: See attached addendum.

GMDN Code: **40763**

UMDNS Code: **17-422**

Classification rule (93/42/EC Annex IX): **10**

To which this declaration relates is in conformity with the requirements of the medical devices directive 93/42/EEC, which apply to it and with the requirements of the directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment and Directive 2014/53/EU.

This conformity is based on the following elements:

- For the directive 93/42/EEC (MDD)
 - Technical documentation, ref Technical File **DOC1605870**, of the product to which this declaration relates.
 - EC certificate: approval of full quality assurance system (annex II w/o (4) of the medical devices directive 93/42 EEC) delivered by TÜV SÜD Product Service GmbH, Ridlerstrasse 65, 80339 Munich, Germany (Notified Body 0123), Certificate N° G1 16 03 23782 082, issued on June 09. 2016.
 - Harmonized standards applied for CE marking according to Directive 93/42/EEC:
 - Medical electrical equipment, general requirements for safety, EN 60601-1:2006 + A12:2014
 - Medical electrical equipment, part. requirements for ultrasonic equipm, EN 60601-2-37:2008 + A1:2015
 - Medical electrical equipment, collateral standard, EN 60601-1-2:2007 + AC:2010
 - Medical electrical equipment, collateral standard, EN 60601-1-6:2010 + A1:2015
 - Medical devices, application of usability engineering to medical devices, EN 62366:2008 + A1:2015
 - Medical Device Software, Software lifecycle process, EN 62304:2006 + AC:2008
 - Information supplied by the manufacturer of medical devices, EN 1041:2008 + A1:2013
 - Symbols for use in the labeling of medical devices, EN ISO 15223-1:2016

Horten, January 22, 2018


Jan Tore Thollefsen
Regulatory Affairs Manager

This EC declaration of conformity supersedes the previous declaration for Vivid E95, Vivid E90, Vivid E80 version v202, dated November 23, 2017.



- For the directive 2011/65/EU (RoHS)
 - Technical documentation, ref Technical File **DOC1605870**, of the product to which this declaration relates.
- For the directive 2014/53/EU (Radio Equipment Directive)
 - Technical documentation, ref Technical File **DOC1605870**, of the product to which this declaration relates.
 - Harmonized standards applied on the product to which this declaration relates:
Health & Safety (Directive 2014/53/EU Art. 3(1)(a)): EN 60601 1:2006 + A12:2014 per Directive 93/42/EEC;
EMC (Directive 2014/53/EU Art. 3(1)(b)): EN 60601-1-2: 2007 + AC: 2010 Section 6 per Directive 93/42/EEC;
Radio Spectrum (Directive 2014/53/EU Art. 3(2)): EN 300 328 v2.1.1 (2016-11); EN 301 893 v1.8.1 (2015-03)
+ EN 301 893 v2.1.1 (clause 4.2.8 only)-as declared in DOC2039913.

Horten, January 22. 2018



Jan Tore Thollefsen
Regulatory Affairs Manager

**ADDENDUM TO THE EC DECLARATION OF CONFORMITY dated January 22, 2018**
Vivid E95, Vivid E90, Vivid E80 (v202) – Product, options list and I/O

CONSOLE Name / with description	GE Vingmed Part # ^[1]	GEMS Cat # ^[2]
Vivid E95	GC000500	H45591AA
Vivid E90	GC000510	H45591AB
Vivid E80	GC000520	H45591AC
OPTIONS CONSOLS	GEMS Cat # ^[2]	
Vascular Contrast		H45561MZ
Adv. Contrast Imaging		H45571GY
AFI Productivity Package		H45561GX
IMT		H45561GY
4D Strain and LV Mass		H45561NB
4D Auto AVQ		H45581CL
Stress		H45561NC
Auto 2D EF		H45561ND
4V Enable		H45561RJ
Advanced Qscan Imaging		H45561RK
4D Auto MVQ		H45591AD
4D Auto RVQ		H45591AE
MVA to 4D Auto MVQ conversion		H45591AM
RV Volume to 4D Auto RVQ conversion		H45591AN
4D PolarVision, Vivid Exx		H45571HA
TEE Interface Module		H45571FK
Quantitative Analysis Package		H45571FL
Tissue Tracking		H45571FM
Scan Assist Pro		H45571FP
DICOM Connectivity Package		H45571FR
HDlive		H45581EG
AFI Stress		H45581EH
DICOM viewer		H45581EJ
6VT biplane/triplane option		H45581EK
Blood Speckle Imaging (BSI)		H45591AF
Myocardial Work		H45591AG
4Vc-D Enable		H45591PA
10T-D Enable E series		H45591PB
Vmax option		H45591HY

I/O ^[3]	GEMS Cat # ^[2]
ECG cable, adult, AHA	H45571PY
ECG lead set, adult, AHA	H45571PZ
ECG cable, adult, IEC	H45571RA
ECG lead set, adult, IEC	H45571RB
ECG cable, neo, AHA	H45571RD
ECG cable, neo, IEC	H45571RE
Lead/electr neo AHA 600	H45571RJ
Lead/electr neo IEC 600	H45571RK
Adapter, ECG 3-lead	H45571RL

Notes used in the table :

1. GE Vingmed Part # identifies the device(s) in the manufacturer's design, manufacturing and service documentation. It is usually affixed to the device(s) in the form of a product identification or rating label.
2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. I/O-devices may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.

Horten, January 22. 2018


Jan Tore Thollefsen
Regulatory Affairs Manager



Vivid E95, Vivid E90, Vivid E80 (v202) – Probes with accessories

PROBES w. Accessories ^[3]	TYPE ^[4]	GEHC Cat # ^[2]
4V-D	BF	H4001BT
4Vc-D	BF	H40482LS
M5Sc-D	BF	H44901AE
6S-D	BF	H45021RR
12S-D	CF	H45021RT
9L-D	BF	H40442LM
11L-D	BF	H40432LN
C1-6-D	BF	H40472LT
C2-9-D	BF	H40462LN
8C	BF	H40412LJ
iC5-9-D	BF	H40442LK
C3-10-D	BF	H40482LB
L8-18i-D	BF	H40452LL
6Tc	BF	H45551ZD
6Tc-RS ^[5]	BF	H45551ZE
6VT-D	BF	H45581BJ
9T	BF	H45521DY
9T-RS ^[5]	BF	H45531YM
10T-D	BF	H44901AH
P2D	BF	H4830JE
P6D	BF	H4830JG
TEE Cleaning and Storing System	N/A	H45551NK
TEE Storage Rack	N/A	H45551NM
TEE PROBE ADAPTER FOR 6T-RS/9T-RS	N/A	H45541PX
TEE Scanhead Protection Cover	N/A	H45521CK
Ped TEE Scanhead Protection Cover	N/A	H45541RN
Scanhead protection, pediatric, 25pcs	N/A	H45551MT
TEE Clip-On Bite Guard Adult	N/A	H45511EE
TEE Clip-On Bite Guard Adult OR	N/A	H45521CB
TEE Conventional Bite Guard Adult	N/A	H45521JH
TEE Conventional Bite Guard Ped.	N/A	H45521JG
Bite Hole Indicator	N/A	H45531HS
4Vc-D Multi Angle Biopsy kit	N/A	H40482LP
C1-6-D Biopsy bracket	N/A	H4913BB
C2-9-D Biopsy bracket	N/A	H4913BA
iC5-9-D Needle guide	N/A	E8385MJ
9L Bio guide starter kit	N/A	H4906BK
12L-RS / 11L-D Multi biopsy guide	N/A	H40432LC
M5Sc-D Biopsy kit	N/A	H45561FC

Notes :

2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. Probes and accessories may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.
4. Type identifies the degree of protection against electric shock for each probe, as labeled on the probe itself.
5. The probes 6Tc-RS and 9T-RS can only be used on Vivid E95/E90/E80 when used together with the TEE Probe Adapter –RS, H45541PX. The adapter itself is not an applied part.

Horten, January 22. 2018


Jan Tore Thollefsen
Regulatory Affairs Manager

**Vivid E95, Vivid E90, Vivid E80 (v202) – Accessories and Upgrades**

ACCESSORIES ^[3]	GEHC Cat # ^[2]
View-X	H45591AK
B&W printer, digital with USB	H45531HK
Color Laser Printer 220V	H45541MJ
Color Video Printer	H45561AA
Installation for printers	H45541MK
ECG Cable set	H45521AL
Tripedal footswitch	H46732LF
USB Memory Key 32GB	H45581NA
External USB hard disk, 2TB	H45571YW
External Digital Video Stream Recorder	H45581EL
Protective Cover Vivid Expert	H45551NJ
Stereo Glasses for 3D visualization, Set	H45551MH
Spectacle Casing	H45551MJ
Anacrome 3D glasses	H45551MK
Anacrome 3D glasses Clip-On Flips	H45551ML
RealD 038 3D Glasses	H45571YR
RealD 04 Clip-on 3D Glass	H45571YS
Sony 3D monitor kit	H45581AT
Vivid Exx DVD Option	H45581NB
Optical Isolation cable	H45571SA
Wireless USB Adapter	H45591HS
Vivid Exx Veterinary Kit	H45581LC
Vet probe Caution Label	H48492AW / H48992LR

UPGRADES ^[4]	GEHC Cat # ^[2]
Vivid E80 4D upgrade	H45581NY
Vivid E90 4D upgrade	H45581EM
Vivid E80_E90_E95 v201 to v202	H45591AL
R2 Software E series	H45591HT
4D HVR Enabler	H45591HW
GRLY board for 4Vc-D	H45591KD

Notes :

2. GEHC Cat # identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sale contract, order processing documents and shipping documents.
3. Accessories may carry the CE-mark and, when applicable, the Notified Body number corresponding to the EC Declaration under which the products are CE-marked by their manufacturer. GE Vingmed Ultrasound AS has verified the mutual compatibility of the devices in combination with Vivid E95/E90/E80, and included relevant information to users with the Vivid E95/E90/E80 instructions for use. This activity was subject to appropriate methods of internal control and inspection.
4. UPGRADES are items available for aftermarket sales. An upgrade may include and enable functionality which is identified as being "Not available" for the initial production and sale of the same model.

Horten, January 22. 2018



Jan Tore Thollefsen
Regulatory Affairs Manager



Benannt durch/Designated by
Zentralstelle der Länder
für Gesundheitsschutz
bei Arzneimitteln und
Medizinprodukten
www.zlg.de
ZLG-BS-244.10.08



Product Service

EC Certificate

Full Quality Assurance System
Directive 93/42/EEC on Medical Devices (MDD), Annex II excluding (4)
(Devices in Class IIa, IIb or III)

No. G1 023782 0112 Rev. 00

Manufacturer:

GE Vingmed Ultrasound A/S

Strandpromenaden 45
3191 Horten
NORWAY

Facility(ies):

GE Vingmed Ultrasound A/S
Strandpromenaden 45, 3191 Horten, NORWAY

**Product Category(ies): Diagnostic Ultrasound Systems, related
Ultrasound Probes and Standalone
Software for Ultrasound-Image Processing**

The Certification Body of TÜV SÜD Product Service GmbH declares that the aforementioned manufacturer has implemented a quality assurance system for design, manufacture and final inspection of the respective devices / device categories in accordance with MDD Annex II. This quality assurance system conforms to the requirements of this Directive and is subject to periodical surveillance. For marketing of class III devices an additional Annex II (4) certificate is mandatory. See also notes overleaf.

Report No.:

713161407

Valid from:

2019-12-01

Valid until:

2024-05-26

Date,

2019-09-02

Stefan Preiß
Head of Certification/Notified Body



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bei Arzneimitteln und
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www.zlg.de
BS-MDR-099



Product Service

EU Quality Management System Certificate (MDR)

Pursuant to Regulation (EU) 2017/745 on Medical Devices, Annex IX Chapters I and III
(Class IIa and Class IIb Devices)

No. G10 075707 0078 Rev. 00

Manufacturer:

GE Healthcare Austria GmbH & Co OG

Tiefenbach 15
4871 Zipf
AUSTRIA

The Certification Body of TÜV SÜD Product Service GmbH certifies that the manufacturer has established, documented and implemented a quality management system as described in Article 10 (9) of the Regulation (EU) 2017/745 on medical devices. Details on device categories covered by the quality management system are described on the following page(s).

The Report referenced below summarises the result of the assessment and includes reference to relevant CS, harmonized standards and test reports. The conformity assessment has been carried out according to Annex IX Chapter I and III of this regulation with a positive result.

The quality management system assessment was accompanied by the assessment of technical documentation for devices selected on a representative basis.

The certified quality management system is subject to periodical surveillance by TÜV SÜD Product Service GmbH. The surveillance assessment shall also include an assessment of the technical documentation for the device or devices concerned on the basis of further representative samples.

Report No.: 713175299

Preceding certificate No.: this certificate is issued for the first time

Valid from: 2020-05-14

Valid until: 2025-05-13

Date of initial issuance / Rev.00: 2020-05-13

Christoph Dicks
Head of Certification/Notified Body

Issue date: 2020-05-14



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Zentralstelle der Länder
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Medizinprodukten
www.zlg.de
BS-MDR-099



Product Service

EU Quality Management System Certificate (MDR)

Pursuant to Regulation (EU) 2017/745 on Medical Devices, Annex IX Chapters I and III
(Class IIa and Class IIb Devices)

No. G10 075707 0078 Rev. 00

Device Group
Echographic Instruments

Risk Classification
IIa

**The validity of this certificate
depends on conditions and/or
is limited to the following:** None

**Revision History including
Changes:** 00 / 2020-05-13 / 713175299



Certificate of Completion

This certifies that

Ion Negru

has successfully completed

Proficient_UL Service Training (DL)

Completed on 3/26/2021
(date format: mm/dd/yyyy)



Certificate of Completion

This certifies that

Ion Negru

has successfully completed

Proficient_UL Exam (DL)

Completed on 4/1/2021

(date format: mm/dd/yyyy)

Certificate

The Certification Body of
TÜV Rheinland LGA Products GmbH

hereby certifies that the organization

GE ULTRASOUND KOREA, Ltd.
9, Sunhwan-ro 214beon-gil, Jungwon-gu
SEONGNAM-SI, GYEONGGI-DO
Republic of Korea

has established and applies a quality management system for medical devices
for the following scope:

(see attachment for scope and additional site included)

Proof has been furnished that the requirements specified in

EN ISO 13485:2016

are fulfilled. The quality management system is subject to yearly surveillance.

Effective Date: 2020-03-17
Certificate Registration No.: SX 60146260 0001
An audit was performed. Report No.: 32090188 001
This Certificate is valid until: 2021-11-04

Certification Body



Deutsche
Akkreditierungsstelle
D-ZM-14169-01-02

Date 2020-03-17



Balazs Bozsik

Balazs Bozsik

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: +49 221 806-1371 Fax: +49 221 806-3935 e-mail: cert-validity@de.tuv.com <http://www.tuv.com/safety>

TÜV Rheinland
LGA Products GmbH
Tillystraße 2, 90431 Nürnberg

**Attachment to
Certificate**

Registration No.: SX 60146260 0001
Report No.: 32090188 001

Organization: GE ULTRASOUND KOREA, Ltd.
9, Sunhwan-ro 214beon-gil, Jungwon-gu
SEONGNAM-SI, GYEONGGI-DO
Republic of Korea

Scope: Design and Development, Manufacture and Final Test of
Ultrasound Diagnostic Devices and Systems

Site Included:
GE Ultrasound Korea, Ltd.
65-1, Sangdaewon-dong, Jungwon-gu
Seongnami-si, Gyeonggi-do
462-120 Republic of Korea

Design and Development, Manufacture and Final Test of
Ultrasound Diagnostic Devices and Systems

Certification Body



Balk Balazs

Date: 2020-03-17

Balazs Bozsik

Vivid E95 Ultra Edition Console

Country kits mandatory selectable

Probes

4Vc-D
6Vc-D
M5Sc-D
6S-D
12S-D
9L-D
11L-D
ML6-15-D
C1-6-D
C2-9-D
C3-10-D
IC5-9-D
6VT-D
10T-D
9T
L8-18i-D
P2D
P6D

SW Options

Vmax
CT-Fusion
4D Markers
HD live, HD color, Flexilight
4D Strain and LV Mass
4D Auto MVQ, AVQ,
TVQ, RVQ, LAQ
Stress
AFI 3.0
AFI Stress
AFI RV, AFI LA
Auto EF 3.0
Myocardial Work
BSI
AI Auto Measure
Adv. Contrast Imaging
Vascular Contrast
IMT
Rodent
DICOM viewer
Vivid E eDelivery Enable
Tricefy Uplink
Streaming

HW Options

Vivid Exx Vet. Kit
Vet probe caution label
WiFi
Tripedal footswitch
DVD Option
Adapter for
Pressure Xducer
Adapter for MA-300
Heart Sound micro
View-X

Accessoiries

Storage Box
USB Memory Key 32GB

Biopsy Kits

Peripherals

B/W Printer
Col. Printer
External Digital Video
Stream Recorder

[System
Overview](#)

[Base
System](#)

[Standard
Features](#)

[Country Kits
Keyboards](#)

[Probes](#)

[Biopsy and TEE
Accessories](#)

[Advanced
Options](#)

[Connectivity
Hardware Options](#)

[ECG
Accessories](#)

[Printers
and other
Peripherals](#)

[Accessories
and
Upgrades](#)

[System
Manuals](#)

[TEE
Manuals](#)

Vivid E95 Ultra Edition Standard features

Standard Features (see datasheet for more information)

Standard Features:

- 22" wide screen OLED or 24" high contrast LCD monitor
- Biplane and Triplane
- 4D single/dual/multi beat-Flexi-Volumes
- Multi-Slice Imaging, incl. 5, 6, 7, 9 and 12-slice
- 4D Color
- Depth Color Render, including Depth Illumination
- Stereo Vision
- Easy 4D (Auto LVQ / 4D Views / 4D Stress
- Advanced 4D User Package
 - Auto Align/Measure on Render/Dynamic Crop/
 - Dynamic Multi-Slice/Live Multi-Slice
- 4D workflow package: QuickRotate / 2-Click Crop / FlexiSlice / Laser Lines / Biplane Prepare / FlexiZoom
- 6VT-D (4D TEE) support, 4V / 4Vc enable
- Scan Assist (Stress/CRT protocols)
- Scan Assist Pro (protocol driven exams)
- UD Clarity
- HD Imaging
- Code Phase Inversion
- AMM/Curved AMM
- TVI/Tissue Tracking
- Auto Optimization
- ASO
- Compound

Standard Features (continued)

- True Confocal Imaging
- Virtual apex imaging
- Virtual convex imaging
- Adaptive Contrast Enhancement (ACE)
- Extended Field of View (LOGIQView)
- Q-Analysis: Qstress/ QTVI/ QContrast
- Advanced Vascular (B-flow/BFI/Speckle Reduce)
- Z Scores for pediatrics
- DICOM® Media (embedded viewer requires optional purchase)
- DICOM SR (Cardiac/Pediatrics/Vascular)
- Heart Failure Report
- DICOM Connectivity Package (Modality Worklist/Print/Storage)
- EchoPAC*/Patient Archive
 - Report Designer/Statement Engine/Normal Values/E-Sign-off
- Configurable prospective/retrospective capture
- LVO Contrast included as preset as well as a QuickApp
- Enhanced security features (Disk Encryption, LDAP, secure password policies)
- QuickApps
- Cardiac Auto Doppler
- Ability to transfer Systole Only in stress to PACs
- AI based selectable raw data transfer to PACS
- Windows 10 operating system
- White listing
- Advanced QScan Imaging



REGISTRUL DE STAT AL DISPOZITIVELOR MEDICALE

Tip	Denumire
I.3. Certificatul CE	Certificat CE
I.2. Declarația de conformitate CE	Declarație de conformitate CE_V201
I.2. Declarația de conformitate CE	Declarație de conformitate CE_V202

Nr	Denumire	Den.comerc.	Model	Nr. catalog	Tara	Producatorul	Reprezentant	Ordin	Data	Cod vamal
			vivid E95							
DM000121698	SISTEM DE IMAGISTICĂ CARDIOVASCULARĂ CU ULTRASUNETE		Vivid E95, software version 201	H45581DA	Norvegia	GE VINGMED ULTRASOUND AS	INTERMED S.R.L.	A07.PS-01.Rg04-149	11-06-2018	
DM000121795	SISTEM DE IMAGISTICĂ CARDIOVASCULARĂ CU ULTRASUNETE		Vivid E95, software version 202	H45591AA	Norvegia	GE VINGMED ULTRASOUND AS	INTERMED S.R.L.	A07.PS-01.Rg04-149	11-06-2018	

☒
Содержит([Model]), 'vivid E95')
Очистить



Vivid E95



Product Description

The Vivid™ E95 combines the proven breadth, quality and performance of the Vivid product line with a new and innovative software image processing platform: cSound™. The Vivid E95 is GE cardiovascular ultrasound's leadership scanner.

The system is designed to excel in adult 2D and 4D cardiac imaging, as well as in the following clinical application areas: pediatric cardiac, fetal/obstetrics, abdominal (including renal, GYN/pelvic), pediatrics, small organ (including breasts, testes and thyroid), adult and neonatal cephalic, peripheral vascular, musculoskeletal conventional, urology/prostate, transesophageal, transrectal, transvaginal and intraoperative (including vascular, thoracic/cardiac and abdominal).

Vivid E95 is delivered with a high-quality 22" high-resolution wide screen OLED monitor for optimal spatial and dynamic resolution.

System Architecture

GE's exclusive, programmable and flexible software beamforming technology, cSound, provides exceptional image quality and power compared to conventional GE hardware-based beamforming technology. In 2D, cSound offers true confocal imaging without the limitation of focal zones or sacrifice of frame rate and spatial resolution. In 4D, cSound delivers high spatial resolution at large volume sizes in full volume single-beat and multi-beat 4D acquisition. Using both coherent and harmonic image processing, the system provides computational power, ease of imaging, workflow flexibility and product upgradeability.

The Vivid E95 is designed to excel in the following areas:

Exceptional image quality is created through the use of True Confocal Imaging. The technique is enabled by the cSound platform taking advantage of advanced software image reconstruction and state-of-the-art graphics computer technology. The Vivid E95 combines second generation Ultra Definition Clarity filtering, HD Imaging (optimal resolution, penetration and image uniformity), Adaptive Contrast Enhancement (ACE) and virtual apex (wide field-of-view) to deliver excellent cardiovascular ultrasound image quality

Probe Technology – The XDclear™ series of probes are designed to help deliver powerful and efficient sound waves, with high bandwidth and efficiency. XDclear probe technology provides impressive deep penetration and high sensitivity while maintaining high spatial resolution. The combination of Single Crystal, Acoustic Amplifier and Cool Stack technologies is the core technology of the XDclear series of probes.

Ease of Use features make Vivid E95 an extremely productive 4D and 2D cardiovascular ultrasound system. Ease of use in 4D imaging is accomplished with a number of GEHC exclusive innovations, including Single Beat 4D, 4D Views, Advanced 4D User Toolbox including FlexiSlice, Advanced 4D User Quantification Package, 4D Stress Echo, 4D Auto LVQ including 4D Strain, 4D Auto RVQ, 4D Auto MVQ, 4D Auto AVQ, FlexiViews and View-X. Ease of use for the operator in 2D imaging is provided by the cSound technology delivering auto optimized excellent image quality with minimal manipulation along with automated tools like 2D Auto EF, AFI Productivity Package, AFI Stress, Scan Assist Pro, QuickApps, Cardiac Auto Doppler, Myocardial Work, Blood speckle Imaging.

Ergonomic features include a highly portable user-adaptable design with electronic adjustable height and keyboard, articulating and height adjustable monitor, and lightweight transducers combining to make the Vivid E95 an ergonomic-friendly cardiovascular ultrasound system.

The cSound platform takes GE's **Raw Data** to a new level. For image processing and reconstruction, the Vivid E95 utilizes more than 100 times the data compared to its predecessor.

Additionally, the Vivid E95 uses an innovative data format technology that allows for advanced processing on archived images by applying many of the same scan controls and **advanced quantitative tools** as are available during the original exam.

General Specifications

Dimensions and Weight

- Width: 544 mm, 21 3/4"

- Depth: 844 mm, 33 1/4"
- Height: 1230 mm – 1670 mm,
48 3/8" – 65 3/4"
(up/down mechanism + LCD arm)
- Weight: 126 kg , 278 lbs

Electrical Power

- Nominal input voltage:
100-240 VAC, 50/60 Hz
- Typical power consumption: 500 W
@ default cardiac preset with M5Sc
- Rated power consumption: 700 W

Operating System

- Windows® 7

Console Design

- Five active probe ports
- ECG port
- Integrated HDD
- Multiple USB ports (front/back)
- Integrated DVD-R multi drive (optional)
- On-board storage for B/W
thermal printer
- Integrated speakers for
premium sound
- Integrated locking mechanism that
provides rolling lock and caster
swivel lock
- Integrated cable management
- Easily accessible removable
air filters for cleaning
- Front and rear handles
- Side storage trays
- Rear storage trays/baskets
- Hand rest

User Interface

Operator Keyboard

- Floating keyboard adjustable in
three dimensions:
 - Height
 - Rotation
 - Extension
- Touch keyboard with support for
characters in 12 languages
- Drawer type, lit, A/N keyboard

- Support for European keyboard
character sets (ISO 8859)
- Ergonomic hard key layout
- Interactive back lighting
- Integrated gel holders
- User-configurable probe holders
- Easy-to-learn user interface
- Dedicated rotary for overall gain
for 2D-mode
- Dedicated gain rotary for M-mode,
CFM or Doppler controlled by
active mode
- Image manager on the touch
screen for quick review of image
clipboard contents

Touch Screen

- 12" ultra-high-resolution, wide screen
format, color, multi-touch LCD screen
- Interactive user-configurable
dynamic software menu
- Backlight adjustment – automatic by
light sensor or manual
- Touch-panel controls content can
be set to routine or extended usage

Monitor

- 22" wide screen High-Definition (HD)
flicker-free OLED display
- 256 shades of gray and 16.7 million
simultaneous colors available
- Articulated monitor arm
- Monitor translation
(independent of console):
 - 350 mm horizontal bidirectional
 - 150 mm vertical height adjustment
 - Swivel to any viewing direction
- Fold down and rotation lock
mechanism for transportation
- Horizontal viewing angle wider
than 170°
- Resolution: 1920 x 1080 px
- Automatic or manual digital brightness
and contrast adjustment for optimal
viewing in different ambient light
conditions (light-sensor)
- Tint and backlight adjustments
- Separate adjustment for external
monitor brightness/contrast

System Overview

Probe Presets

- Cardiac
- Stress (incl. Exercise, QStress and
LVO Stress) (optional)
- Abdominal (incl. renal)
- Vascular (incl. carotid, LEA, LEV, UEA,
UEV, aorto-iliac)
- Fetal heart
- Pediatric
- Neonatal
- Neonatal head
- Small parts
- Thyroid
- Breast
- Musculoskeletal
- Intra Operative
- Transcranial
- Scrotal
- Urology (incl. pelvic)
- Rodent
(incl. rats and mice for research)
- Transesophageal
- OB/GYN
- Coronary (part of QuickApps)
- Contrast (optional)
- Contrast low MI (optional)
- LVO contrast (part of QuickApps)

Operating Modes

- 2D tissue
- 4D tissue
- 2D color flow
- 4D color flow
- 2D angio flow
- Color M-mode
- Tissue velocity M-mode
- Continuous wave Doppler
- Tissue M-mode
- Pulsed wave Doppler
- Anatomical M-mode
- Curved anatomical M-mode
- Tissue velocity imaging
- Tissue tracking

- Tissue synchronization imaging (optional)
- Strain imaging (optional)
- Strain rate imaging (optional)
- Tissue velocity Doppler
- Blood flow imaging
- Blood Speckle Imaging (BSI) (optional)
- Blood flow angio flow imaging
- B-flow
- 2D stress (optional)
- 2D virtual apex imaging
- Bi-plane
- Tri-plane
- Bi- and tri-plane with color
- Coded phase inversion and power modulation contrast imaging
- Compound imaging
- Extended field-of-view (LOGIQ™ View)
- 4D full volume scanning – single-beat and multi-beat
- 4D stress
- 4D strain imaging (optional)

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

Standard 4D Features

- Single, dual or multiple cycle volume acquisition
- Bi-plane acquisition includes tilt and rotate, and bi-plane
- Tri-plane acquisition
- Multi-dimensional (bi-plane/tri-plane) color acquisition
- Dynamic multi-slice views
- Live multi-slice views
- FlexiSlice with depth mode

- 4D stress
- Multi-dimensional stress
- QuickRotate/Rotate
- Auto crop
- 2-click crop
- Flip crop
- View crop
- Dynamic view crop
- Measurement on render
- FlexiZoom
- Stereo vision
- Laser Lines
- Depth color render
- Automatic LV alignment
- 4D virtual apex
- Automated 4D left ventricular quantification (LV volume and EF)
- FlexiViews

Optional 4D Features

- 4D Auto AVQ: Automated 4D aortic annulus quantification (dimension, area, circumference)
- 4D strain and 4D LV Mass
- 4V enable (required to run 4V-D probe)
- HDLive
- 4D Auto MVQ
- 4D Auto RVQ
- Polarized stereo vision
- View-X

Peripheral Options

- Console protective cover

Internal peripherals

- USB B/W video printer with control from system (optional)

External peripherals

- Direct streaming DVR (Sony® HVO-550MD)
- Network printers
 - USB inkjet printer
 - Color laser printer
 - Color video printer with control from system

- 16 GB encrypted memory stick
- 2 TB USB hard drive (2 x 2 TB SATA II hard drives mirrored for data redundancy)
- Three-pedal configurable footswitch
- Optical isolation cable – DVI 104 fiber optic extender, required to connect the Sony 3D monitor for PolarVision (polarized stereo vision display)

External outputs

- DVI-D
- Ethernet – 10 Mbps, 100 Mbps, 1 Gbps
- Multiple USB 2.0 ports

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/CW
 - 2D + CFM/TVI + PW
 - 2D + CFM + CW
 - 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
 - Compound + M/CFM/PW
 - 4D + CFM
 - 2D + bi-plane
 - 2D + bi-plane + CFM/TVI/SRI/TT/ SI/TSI/AMM/CAMM
 - 2D + tri-plane
 - 2D + tri-plane + CFM/TVI/SRI/TT/SI/TSI/AMM/CAMM
 - 2D + color split screen (simultaneous mode)
- Real time dual view 2D + 2D and color/power angio

- Real time dual view 2D + 2D and color/power angio
- 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
- 4D display
 - Two + one slice and render view
 - Quad view (three-slice and render)
 - Single render view
 - Slice-only view
 - Dynamic multi-slice
 - Live multi-slice
 - FlexiSlice (live and replay)
 - Bi-plane side/side view
 - Tri-plane view (quad including geometry viewer)
 - Crop view (three orthogonal slice + render)
 - Apical slice view (three 60 degrees view + render)
 - Cine rotate render view
 - Bi-plane prepare (two-slice + render)

Display Annotation

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

- Probe orientation
- Depth scale marker
- Image depth
- Zoom depth
- B-mode
 - Gain
 - Imaging frequency
 - Frame averaging
- M-mode
 - Gain
 - Frequency
 - Time scale
- Doppler mode
 - Gain
 - Angle
 - Sample volume size and position
 - Wall filter
 - 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
- 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 guide line and zone
- Heart rate

- Trackball-driven annotation arrows
- Active mode display
- Stress protocol parameters
- Parameter annotation follow ASE standard
- Free text with word library
- 4D slice intersection markers
- 4D gauge
- 4D viewing angle arrows
- 4D geometry viewer
- 4D number of cycles
- 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
- User-programmable preset capability with administrator preset protection
- QuickApps: Factory and user programmable sub-preset feature that keeps 2D and geometry settings while adapting color flow or contrast parameters
- Factory default preset data, protected against modification
- User-defined annotations
- Body patterns
- Customized comment home position

Comprehensive User Manual Available on Board

Available through touch-panel utility page. User manual and service manual are included on a USB memory device with each system. A printed user manual is provided.

- User manual languages: English, French, German, Spanish, Italian, Portuguese (European and Brazilian), Swedish, Danish, Dutch, Norwegian, Japanese, Chinese, Polish, Finnish, Greek, Russian, Hungarian, Slovak, Romanian, Czech, Latvian, Lithuanian, Turkish, Estonian, Korean, Serbian, Bulgarian, Croatian, Indonesian, Kazakh, Ukraine

CINE Memory/Image Memory

- 8 GB of RAM
(0.5 GB used for 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

- 4D virtual store for efficient 4D image management
- On-board database of patient information from past exams
- User-selectable ECG and time gated acquisition available on touch panel during live
- User-selectable prospective or retrospective capture in config
- Storage formats:
 - DICOM®-compressed or 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 and VolDicom formats
- Storage devices:
 - USB memory stick: 16 GB
 - CD-RW storage: 700 MB (DVD option required)
 - DVD storage: -R (4.7 GB) (DVD option required)
 - Hard drive image storage: 0.5 TB
- Compare old images with current exam
- Reload of archived data sets
- Activation control of USB devices (for security)

Connectivity and DICOM

- Ethernet network connection
- DICOM 3.0

- Verify
- Print
- Store
- Modality worklist
- Storage commitment
- Modality Performed Procedure Step (MPPS)
- Media exchange
- DICOM spooler
- DICOM query/retrieve
- Structured reporting – compatible with adult cardiac, pediatric and vascular
- 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

Patient Archive EchoPAC™/Patient Archive

- Integrated EchoPAC functionality adds connectivity and image analysis capability to scanner
- Data format fully compatible with offline EchoPAC review/reporting stations of same or newer vintage
- Instant access to ultrasound raw data provided by the system
- Advanced post-processing analysis
- Three user levels help organizing 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
- 2D, CFM or TVI data at maximum frame rate may be reviewed by scrolling or by running cine loops (can contain more than 1000 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 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 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 XML format
- JPEG export ("Save As") for still frames
- AVI and MPEG export ("Save As") for cineloops

- Specialized file format “Save As” VolDICOM feature to allow data import into TomTec Research Arena free-standing workstation

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 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 and clinical application support
- Operation of Insite Express Connection is dependent on the infrastructure being available – check with your local GE service representative
- File transfer enables the customer (biomed or clinician) to directly transfer system information (e.g., system logs, images, parametric data) to GE product engineering teams (no patient data transferred)
- Software reload provides remote application reconstruction and recovery capabilities in the event of system corruption

Scanning Parameters

- Infinite number of effective channels
- Minimum field-of-view range (depth): 0 – 2 cm (zoom) (probe dependent)
- Maximum field-of-view range (depth): 0 – 50 cm (probe dependent)
- Width range: 10 – 120 degrees
- Continuous dynamic receive focus/continuous dynamic receive aperture
- Continuous dynamic transmit focus
- Adjustable dynamic range, infinite upper level

- Image reverse: Right/left
- Image rotation of 0°, 180°

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
- Depth range up to 36 cm – probe specific
- Selectable grayscale parameters: Gain, reject, DDP, clarity, dynamic range and compress – can be adjusted in live, digital replay and image clipboard recall (probe dependent)
- Automatically calculated TGC curves reduces operator interaction
- Automatically calculated lateral gain

2D Mode

- Sector tilt and width control
- Frame rate in excess of 1000 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 fundamental imaging. Features help reduce noise, improve wall definition, and axial resolution, making it well suited for a wide variety of patient groups
- True confocal imaging – ultra narrow focused two-way beam profile throughout the field-of-view, maintaining frame rate, no zone stitching, no multi-line acquisition artifacts and enhanced dynamic contrast resolution throughout field-of-view compared to conventional focal imaging

- Adaptive Contrast Enhancement (ACE) – emphasizing echoes from real structures while reducing noise/haze, resulting in enhanced signal-to-noise ratio
- 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 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
- HD imaging – real-time simultaneous acquisition at dual frequencies compounded to help reduce speckle and noise while enhancing resolution and contrast
- Multiple-angle compound imaging – multiple co-planar images from different angles combined into a single image in real-time to help enhance border definition and contrast resolution, as well as reduce angular dependence of border or edge as compared to no-compound imaging
- Virtual convex allows a wider FOV and aims to enhance image quality on linear probes in particular
- Elevation compounding (4D probes only)
- 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 that is larger than what would fit in a single image
- 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 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
- Optimized presets for further 2D strain analysis on EchoPAC (separate option)

4D Mode

- Flexi-volumes with customizable acquisition for volume size, volume rate or resolution
- Single-beat 4D scanning with real-time volume rendering display
- Multi-beat 4D scanning for high-resolution scanning
- Adjustable volume sizes for both single and multi-beat scanning
- Adjustable volume shape control
- Pre-defined volume sizes for quick volume setup
- Adjustable number of cycles for multi-beat scanning
- FlexiZoom for easy 4D visualization of structures of interest
- 4D scanning supporting variable octave and fundamental frequencies
- HDlive Imaging – acquisition and visualization providing enhanced display of anatomical structures using advanced shadowing techniques in combination with depth illuminating colors (optional)
- 4D clarity – user-selectable intelligent spatial filtering algorithm for noise reduction and smoothing both in 4D and in extracted 2D slices
- Coherent volume processing with motion compensation for seamless and artifact-free 4D and 2D slices
- Variable frame rate settings available
- Volume optimize control for volume rendering transparency and quality setting
- Flip crop available for changing 4D view direction 180 degrees with mirrored crop volume
- Dynamic multi-slice enables positioning of the multi-slice, short-axis cut-planes at same anatomical position throughout the heart cycle
- Live multi-slice layouts available during live 4D acquisition
- FlexiSlice for interactive slicing, cropping and navigation designed to provide the user with a flexible, yet intuitive way of extracting 2D slices from 4D data sets
- View-crop setting for toggle control of view plane vs. crop plane
- 2-click crop for quick and easy extraction of standard and non-standard views for visualization of 4D structures seen during or after the examination
- Stereo vision in 4D (option)
- Polarized stereo vision in 4D used together with dedicated Sony 3D monitor (option) may help improve depth perception of 4D image
- Laser lines to help improve the visual linkage between the 4D rendered view and the 2D slices
- Wide range of depth color rendering maps
- QuickRotate and Rotate for a flexible and easily accessible way of obtaining the desired single- or multi-plane, two-dimensional views
- 4D virtual apex enabling wider near field-of-view
- FlexiViews offer instant access to predefined (factory or user created) 4D views during live mode

Multi-Dimensional Mode

- Bi-plane scanning – two independent simultaneous scan planes where one of them can be rotated and tilted freely
- Bi-plane prepare mode for ease of obtaining biplane views from 4D render data sets
- 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

- 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 – 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
- 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 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

- The cSound platform with its parallel beamformer architecture allows a combination of ultra-high frame rate and increased lateral resolution compared to previous generation GE scanners
- Ultra-high digital signal processing power, maintaining high frame rates with large ROI's even for very low PRF settings

- Frame rate in excess of 150 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 the color velocity and variance estimates
- Data Dependent Processing (DDP) performs temporal processing and display smoothing to help reduce loss of transient events of hemo-dynamic 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

4D Color Doppler Imaging

- Single-beat 4D color flow scanning
- Volume size control to change the size of the color ROI
- Multi-beat 4D color flow scanning using ECG stitching for increased volume rate
- Adjustable number of cycles for multi-beat scanning
- Variable volume rate settings available
- Flip crop available for changing 4D view direction 180 degrees with mirrored crop volume
- View-crop setting for toggle control of view plane vs. crop plane
- Stereo vision in 4D color
- Tissue transparency control
- Flow transparency control
- Seamless transition from 2D color to 4D color keeping ROI size and position

Multi-Dimensional Color Mode

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

Color Angio

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

Color M-mode

- Variable ROI length and position – user-selectable
- User-selectable radial averaging to help reduce 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

- GE-patented, any plane color M-mode display derived from color Doppler cine loop
- Also 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-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 Speckle Imaging (optional)

- Combines color Doppler with grayscale speckle imaging
- Avoids the aliasing experienced with regular color flow
- Visualizes blood flow patterns by a graphical representation of the trajectories of the blood cells
- Available for specific probes only

Blood Flow Angio Imaging

- Combines angio with grayscale speckle 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 (option, 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 in apical views
- Efficient segment specific TSI time measurements
- Immediate bulls-eye report
- Automatic calculated TSI synchrony indexes
- TSI surface mapping
- LV synchronization report template
- CRT programming protocol

Strain/Strain Rate Mode

(option, 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)

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 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
- 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 the highest 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

LVO Contrast

(included as a QuickApps)

- Enables contrast applications intended for imaging of the left ventricle
- LV contrast (4V-D, M5Sc-D, 6VT-D) enhances delineation of the LV border in combination with ultrasound contrast agents. The 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 4V-D using LV contrast enables acquisition of three simultaneous apical views within one cardiac cycle

- LVO stress (M5Sc-D) provides enhanced delineation of the LV border when contrast is used as part of an exercise stress exam, preserving an adequately long continuous capture buffer length

Contrast Low MI (option)^{1, 2}

Contrast Low MI imaging enabled by the Advanced Contrast option.

- 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 Contrast Low MI application

Vascular/Abdominal Contrast (option)^{1, 2}

Vascular Contrast – enables contrast applications intended for vascular (9L-D) and abdominal (C1-5) contrast imaging.

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

Physiological Traces

- Integrated three-lead ECG module
- Automatic QRS complex detection
- External ECG lead input
- Up to three traces display simultaneously
- Internally generated respiratory trace using ECG leads
- ECG trigger
- ECG lead selection

- High-resolution display of the following traces: ECG, respiration, phono, and pressure/AUX
- Adjustable ECG QRS markers

Automatic Optimization

- Dynamic optimization of B-mode image to improve contrast resolution, TGC and grayscale (soft or sharp, user-selectable)
- Auto-spectral optimize – dynamic adjustments of baseline, and PRF (on live image) and angle correction

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 follow ASE standard
- Seamless data storage and report creation
- User-assignable parameters
- Comprehensive set of 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
- Support for measuring on DVR recordings and DICOM images

¹ Schering developed harmonic imaging for supporting contrast agent imaging.

² 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. 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.

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

Intima Media Thickness (IMT) Measurements (optional)

- Automatic measurements (patent pending) 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

Z-Scores

- Limited implementation of z-scores for a set of predefined pediatric dimension measurements

4D Auto LVQ

- Automated measurement of LV volume and EF from volumetric data
- Automated identification of LV long-axis and standard views

- Automated initialization of measurement ROI
- Validation of detected boundaries
- LV volume waveform for entire cardiac cycle
- ED and ES automatically selected from volume waveform (max/min)
- Editing by point and click
- User approval of final results
- Fully integrated into M&A system with results in worksheet

4D LV Mass and 4D Strain (optional)

- LV Mass with Sphericity Index (SI)
- 4D Strain with support for the following parameters: Area, longitudinal, circumferential, radial, twist and torsion. All global and/or segmental
- Retrospective editing available in 4D Strain
- Strain bulls-eyes and graphs supported in addition to LV surface model with strain color overlay
- 4D Strain export available in HDF format
- User approval of final results
- Fully integrated into M&A system with results in worksheet

4D Auto AVQ (optional)

- Automated alignment, segmentation and measurement of aortic annulus from volumetric data sets
- Editing by point and click
- User approval of final results
- Fully integrated in M&A system with results in worksheet

4D Auto MVQ (optional)

- GE's fully integrated semiautomated mitral valve quantification package offers the ability to visualize the mitral valve and include quantitative results into the patient exam

4D Auto RVQ (optional)

- GE's fully integrated semiautomated right ventricular quantification package offers the ability to visualize the right ventricle and include quantitative results into the patient exam

View-X (optional)

- View-X offers an interface between a cath system and the Vivid scanner, such that the cath x-ray image can be shown as a picture-in-picture window on the Vivid scanner

Quantitative Analysis Package (Q-Analysis)

- Traces for velocity or derived parameters (strain rate, strain, displacement) inside defined regions of interest as function of time
- Contrast analysis with traces for grayscale intensity or angio power inside defined regions of interest as function of time, including post processing ECG triggering and curve fitting for wash in/wash out analysis
- 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 cine loop
- Cine compound displays cine loops generated from a temporal averaging of multiple consecutive heart cycles

Automated Function Imaging (AFI) (optional)

- Parametric imaging tool which gives quantitative data for global and segmental wall motion
- Allows comprehensive assessment at a glance by combining three 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

- Simplified workflow with fully automated ROI tracing (if configured), quick tips and combined display of traces from all segments
- Peak Strain Dispersion (PSD) (included in AFI and 2D Strain [EchoPAC]). Index, as well as bulls-eye displaying variability in time to peak longitudinal strain. The index is the standard deviation from the average (of all segments) over the whole heart cycle, while the bulls-eye displays the PSD in a color scheme where green color indicates normal contraction with a peak at or around AVC, blue color indicates early contraction and yellow to red indicates late contraction

AFI Stress (optional)

- Dedicated protocol and workflow integrating AFI as part of a stress exam (pharmacological, as well as exercise) – see Stress Echo section

Myocardial Work (optional)

- Builds upon the results from AFI
- After adding the external blood cuff pressure and event timing for each AV/MV valve opening/closure a strain pressure curve, a work index and a work efficiency percentage is produced

Automated Ejection-Fraction Calculation (AutoEF) (optional)

- Automated EF measurement tool based on 2D-speckle tracking algorithm and on Simpson
- Integrated into M&A package with worksheet summary

Generic Measurements

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

OB/GYN Application Module

- OB package for fetal growth analysis containing more than 100 biometry tables
- 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 (Biparietal 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 (4)
 - 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

Vascular 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)
- 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

Cardiac Measurements

- %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 EOA I (VTI) (Aortic Valve Effective Orifice Area Index by Continuity Equation VTI)
- AV EOA I 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)
- 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 an 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)
- PReud max PG (Pulmonic Insuf. End-Diastole Pressure Gradient)
- PReud 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 an 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)
- 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)
- 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 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.

Annotations

Body Marks

- Body mark icons for location and position of probe
- Easy selection of body marks from touch panel

Text Annotations

- Easy selection of text annotations from touch panel

Scan Assist Pro

- Customizable automations that assist the user through each step of the scan

- Helps enhance consistency and reduce keystrokes
- Supports selection of all modes, all measurements and dual annotations
- Imaging attributes: Octave, Steer, Dual/Quad screen, Compound, LogiqView, 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

Stress Echo (optional)

Supported Protocol Examinations

- 2D pharmacological stress echo
- 2D bicycle stress echo
- 2D continuous capture stress echo (treadmill stress echo)
- AFI Stress protocols (separate option) – acquire standard apical 2D views and quantify wall motion (longitudinal segmental and global strain) at all stress levels (**Note:** *AFI and Stress options required separately.*)
- Multi-plane stress echo
- 4D stress echo
- Combined 4D/multi-plane and continuous capture stress echo
- Cardiac resynchronization therapy programming protocols (available with the Advanced QScan option)

Protocol Examinations Features (enabled with 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

- 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 Scanner or EchoPAC when the entire recording is stored to file

Multi-plane Stress Echo

- Bi-plane and/or tri-plane acquisition
- Adjustment of scan-plane angle and tilt during acquisition
- Individual scan-planes shown in analysis – possible to show one scan-plane from each of the stress levels simultaneously

AFI Stress Echo (option)

- Single or tri-plane acquisition of standard 2D apical views
- Analysis with dedicated AFI stress analysis tool
- Provides longitudinal strain values per segment, as well as globally
- Allows complete assessment at a glance by combining three longitudinal views into one comprehensive bulls-eye view
- Integrated into M&A package with specialized report templates
- Simplified workflow with adaptive ROI, quick tips and combined display of traces from all segments

4D Stress Echo

- 4D volume acquisition
- Simultaneous display of three apical and one short-axis projection during acquisition

- 4D volume images analyzed in long-axis or short-axis projections
- Long-axis analysis allow rotating the plane around the main axis
- Short-axis analysis allow translation of the plane along the main axis

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 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.)

4D Analysis Tools

4D Views

- Auto alignment to define standard orientation of acquired 4D data
- Standard views, such as 4CH, 2CH, LAX, mitral valve and aortic valve, are defined from the standard orientation
- Automatic display of volume renderings and 2D cut planes from standard views

4D Data Cropping

- Flexible tool for standard or dynamic cropping 4D data using up to six different crop planes

- Each crop plane can be moved without any restrictions
- The crop plane positions are visible in both the volume rendering and in the 2D cut plane displays

Depth Render

- Volume visualization where the color hue changes according to the distance into the image
- Wide selection of different render maps

Stereo Render

- Volume visualization by stereoscopic display necessitates the use of stereoscopic glasses, both red/cyan glasses for conventional StereoVision, and polarized glasses for Polarized stereo vision stereo rendering on dedicated Sony 3D monitor

Multi-slice

- Simultaneous display of 5, 7, 9 or 12 slices extracted from the 4D volume data (tissue and/or color)
- Combination of short-axis and long-axis standard views
- Available in live and replay

FlexiSlice

- Simultaneous display of three independent random slices through the 4D volume (tissue and color)

FlexiViews

- Provides instant access to predefined (factory or user created) 4D views during live mode
- May provide more consistent data while reducing scanning time

Safety Conformance

- The Vivid E95 is built to meet the requirements of:
 - IEC60601-2-37
 - IEC60601-1
 - IEC60601-1-2
 - IEC60601-1-6
 - ANSI/AAMI ES60601-1

- CAN/CSA-C22.2 No. 60601-1
- NEMA UD3
- The European Medical Devices Directive (MDD) 93/42/EEC (CE Mark)
- Directive 2011/65/EU on the restriction of use of certain hazardous substances
- The Vivid E95 ultrasound unit is a Class I device, type CF, according to IEC60601-1
- The Vivid E95 ultrasound unit meets the EMC requirements in EN55011/A1/A2:2007 Class A

Security

Virus Protection

To reduce virus vulnerability, Vivid E95 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 significantly reduce the risk of a virus attack on Vivid E95.

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 address serious issues with Vivid E95 will be made available to customers after GE verification of those patches.

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

Transducers

M5Sc-D XDclear Active Matrix Single Crystal Phased Array Probe

- Probe presets: Cardiac, pediatric, abdominal, fetal heart, cranial, coronary, stress (exercise, Qstress and LVO stress), LV contrast, renal, contrast now MI (optional)
- Biopsy guide: Multi-angle disposable with a reusable bracket

4V-D Active Matrix

4D Volume Phased Array Probe

(NOTE: The option "4V Enable" is required to run this probe.)

- Probe presets: Cardiac, LV contrast, LVO stress, fetal heart, exercise stress, coronary

6S-D Phased Array Probe

- Probe presets: Pediatric, cardiac, coronary, neonatal head, fetal heart, abdominal

12S-D Phased Array Probe

- Probe presets: Pediatric, neonatal, cardiac, coronary, neonatal head, abdominal, rodent

9L-D Linear Array Probe

- Probe presets: Vascular (incl. carotid, LEA, LEV, UEA, UEV), musculoskeletal, thyroid, contrast (optional)
- Biopsy guide: Multi-angle disposable with a reusable bracket

11L-D Linear Array Probe

- Probe presets: Vascular (incl. carotid, LEA, LEV, UEA, UEV), breast, small parts, musculoskeletal, thyroid, scrotal, rodent
- Biopsy guide: Multi-angle disposable with a reusable bracket

C1-6-D XDclear

Curved Array Probe (Convex)

- Probe presets: Abdominal, renal, OB/GYN, urology (pelvic), vascular (incl. aorto-iliac, LEA, LEV), fetal heart, contrast (optional)
- Biopsy guide: Multi-angle, disposable with a reusable bracket

C2-9-D XDclear

Curved Array Probe (Convex)

- Probe presets: Abdominal, renal, OB/GYN, urology (pelvic), fetal heart
- Biopsy guide: Multi-angle, disposable with a reusable bracket

8C Micro Convex Probe

- Probe presets: Abdominal, vascular (incl. carotid, LEA, LEV, UEA, UEV), neonatal-head, musculoskeletal

C3-10-D Micro Convex Probe

- Probe presets: Abdominal, vascular (incl. carotid, LEA, LEV, UEA, UEV), neonatal-head, musculoskeletal

IC5-9-D Convex (Endocavity) Probe

- Probe presets: OB/GYN, urology (pelvic), fetal heart
- Biopsy guide: Single angle, disposable bracket

L8-18i-D Linear Array Probe

- Probe presets: Cardiac, rodent (incl. mice, rats), vascular, musculoskeletal, small parts

P2D Pencil Probe

- Probe presets: Cardiac

P6D Pencil Probe

- Probe presets: Vascular (LEA)

6Tc TEE Probe

- Probe presets: Cardiac, coronary

6VT-D TEE probe

- Probe presets: Cardiac, LVO contrast, coronary

9T TEE Probe

- Probe presets: Pediatric

(NOTE: 6Tc-RS and 9T-RS supported via probe adapter.)

Wideband Probes

- Electronic selection between four solid-state and one stand-alone Doppler probe connectors
- Three probe sockets are DLP type plus one parking socket
- One LOGIQ type connector probe socket for support of TEE and 8C

PROBE	FREQUENCY RANGE	CATALOG #
M5Sc-D (Sector)	1.4 – 4.6 MHz	H44901AE
6S-D (Sector)	2.4 – 8.0 MHz	H45021RR
12S-D (Sector)	4.0 – 12.0 MHz	H45021RT
4V-D (Volume)	1.5 – 4.0 MHz	H4001BT
9L-D (Linear)	2.4 – 10.0 MHz	H40442LM
11L-D (Linear)	4.5 – 12.0 MHz	H40432LN
L8-18i-D (Linear Matrix Array)	5.0 – 18.0 MHz	H40452LL
C1-6-D (Convex)	1.4 – 6.0 MHz	H40472LT
C2-9-D (Convex)	2.3 – 8.4 MHz	H40462LN
8C (Micro Convex)	4.0– 8.0 MHz	H40412LJ
C3-10-D (Micro Convex)	3.0– 10.0 MHz	H40482LB
iC5-9-L (Convex Endocavity)	3.3 – 8.6 MHz	H40442LK
P2D (Pencil)	2.0 MHz	H4830JE
P6D (Pencil)	6.3 MHz	H4830JG
6Tc (TEE)6	3.0 – 8.0 MHz	H45551ZD ³
6Tc-RS (TEE)	3.0 – 8.0 MHz	H45551ZE
6VT-D (Volume TEE)	3.0 – 8.0 MHz	H45581BJ ⁴
9T (TEE)	3.0 – 10.0 MHz	H45521DY
9T-RS (TEE)	3.0 – 10.0 MHz	H45531YM

³ 6Tc-RS and 9T-RS supported via probe adapter.

⁴ Also 6VT-D with catalog # H45561TA is supported.

Product may not be available in all countries and regions. Full product technical specification is available upon request. Contact a GE Healthcare Representative for more information. Please visit www.gehealthcare.com/promotional-locations.

Data subject to change.

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GE Healthcare
9900 Innovation Drive
Wauwatosa, WI 53226
U.S.A.

www.gehealthcare.com



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