Anexa 1

Specificația Tehnică Completată

Model: Logiq Fortis HDU PN:H43302LA ; Producător: GE Healthcare/ GE Ultrasound Korea in comun cu GE Medical Systems; Tara: Korea si Franta.

Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină propusă de către autoritatea ofertantă
Sistem ecografic digital staționar clasa Expert da Sistem ecografic de tip staționar da APLICAȚII CLINICE general, dedicat aplicațiilor abdominale, ginecologice, musculoscheletale, transcraniale, parți moi, etc; da	Sistem ecografic digital staționar clasa Expert **DA** Sistem ecografic de tip staționar **DA** APLICAȚII CLINICE general, dedicat aplicațiilor abdominale, ginecologice, musculoscheletale, transcraniale, parți moi, etc; **DA pagina 1-2 din LOGIQ Fortis R3.x HDU product specification sheet /Applications**
PROBE PORTURI ACTIVI ≥ 4	PROBE PORTURI ACTIVI - 4 **porturi active + 1 port inactiv DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet/ Console Design**
PROBE TIP Linear/ Fregvența minim intre valorile de la maxim 4.0 MHz pina la minim 14.0 MHz Tehnologie pentru aplicatii Părți moi, vasculare, MSK; minim 5 frecvente in modul B, 3 frecvente in armonici superioare, 3 frecvente in armonici tisulare diferentiale 1 bucata Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Da	PROBE TIP Linear/ **Model ML6-15-D** Fregvența **4.0 MHz 16.0 MHz DA** Tehnologie pentru aplicatii Părți moi, vasculare, MSK; **6 frecvente** in modul B, **4 frecvente** in armonici superioare, **4 frecvente in armonici** tisulare diferentiale **este acelas lucru ca si armonice superioare.- 1 bucata** Single cristal/ **Matricia**l/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. **DA pagina 19 din LOGIQ Fortis R3.x HDU product specification sheet**
Endocavitar Frecventa minim intre valorile de la maxim 3,0 MHz pina la minim 10,0 MHz	Endocavitar **IC5-9-D** Frecventa **3,0 MHz - 10,0 MHz**
Tehnologie pentru aplicații OB/GYN; minim 5 frecvente in modul B, 3 frecvente in armonici superioare, 3 frecvente in armonici tisulare diferențiale	Tehnologie pentru aplicații OB/GYN; **6 frecvente** in modul B, **4 frecvente** in armonici superioare, **4 frecvente** in armonici tisulare diferențiale **este acelas lucru ca si armonice superioare**. . **DA pagina 17-18 din LOGIQ Fortis R3.x HDU product specification sheet**
Convex/Abdomen Frecvența minim intre valorile de la maxim 1.9 MHz până la minim 6.0 MHz Câmpul de vedere /Field of View minim 70° Tehnologie pentru aplicații abdominale; minim 5 frecvente in modul B, 3 frecvente in armonici superioare, 3 frecvente in armonici tisulare diferențiale Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. Da	Convex/Abdomen **C1-6-D, XDclear** Frecvența **1,0 MHz - 6.0 MHz** Câmpul de vedere /Field of View **80°** Tehnologie pentru aplicații abdominale**;** 4 frecvente in modul B, **6 frecvente in armonici superioare**, **6 frecvente** in armonici tisulare diferențiale **este acelas lucru ca si armonice superioare.** Single cristal/ Matricial/ **XDclear** sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. **DA**
Multifrequency da Permite lucru cu sondele fără a fi necesar procurarea unui modul pentru scanare Liniar - Single cristal/	Multifrequency **DA** Permite lucru cu sondele fără a fi necesar procurarea unui modul pentru scanare Liniar - Single cristal/ Matricial/ XDclear sau alta tehnologie de ultima generație

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Matricial/ XDclear sau alta tehnologie de ultima generație care formează o imagine de rezoluție înaltă. da	care formează o imagine de rezoluție înaltă. **DA In acest sens atasez Logiq Fortis Probe Guide pagina 2 L2-9-D XDClear, ML6-15-D comunicare cu tehnologia XDClear este in Standart nu necesita o oactivare separata prin procurea unui modul sau obtiuni de soft.**
Liniar cu aplicați micro circulație si muscoloschiletal cu frecvență de vârf minim 18 MHz	Liniar cu aplicați micro circulație si muscoloschiletal cu frecvență de vârf **20,0 MHz L6-24-D pagina 18 din LOGIQ Fortis R3.x HDU product specification sheet**
Convex tehnologie standard adult si copii	Convex tehnologie standard adult si copii **DA C2-7-D pagina 2 din Logiq Fortis Probe Guide**
Phased/cardiacă tehnologie	Phased/cardiacă tehnologie **DA M5Sc-D, 6S-D pagina 2 din Logiq Fortis Probe Guide**
Modul de lucru Elastografie prin Shear Wave pentru toate sondele solicitate Linear, Convex, Endocavitar (Linear pentru examinarea tiroidei și glandelor mamare;	Modul de lucru Elastografie prin Shear Wave pentru toate sondele solicitate Linear, Convex, Endocavitar (-Linear pentru examinarea tiroidei și glandelor mamare; **DA C1-6-D pagina 11 din LOGIQ Fortis R3.x HDU product specification sheet** *Shear Wave Elastography*
Convex pentru examinare ficatului;	-Convex pentru examinare ficatului; **DA ML6-15-D pagina 11 din LOGIQ Fortis R3.x HDU product specification sheet** *Shear Wave Elastography*
Endocavitar pentru examinări ginecologice si prostatei)	-Endocavitar pentru examinări ginecologice si prostatei; **DA IC5-9-D pagina 11LOGIQ Fortis R3.x HDU product specification sheet** *Shear Wave Elastography*)
Sonda Endocavitara tehnologie standard da	Sonda Endocavitara tehnologie standard **DA IC5-9-D pagina 2 din Logiq Fortis Probe Guide.**
ADINCIMEA DE SCANARE minim intre valorile 1 - 49 cm	ADINCIMEA DE SCANARE minim intre valorile **DA 1 - 100 cm pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scanning Parameters*
NIVELE DE GRI ≥256	NIVELE DE GRI - 256 **pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scanning Parameters*
Focus minim în 8 nivele sau tehnologie de focus continuu pe toata adîncimea scanta	Focus **tehnologie de focus continuu pe toata adîncimea scanta DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scanning Parameters > Continuous dynamic receive focus*
Canale digitale minim 6.000.000 sau tehnolgie de canale "infinite"	Canale digitale tehnolgie de canale "infinite" **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scanning Parameters > cSound™ Imageformer: Infinite number of effective channels* **POSTPROCESARE DA**
POSTPROCESARE da	
IMAGINE MODURI B-mod (2D) - prezentări listați standarde de măsurări incluse da	IMAGINE MODURI B-mod (2D) - prezentări listați standarde de măsurări incluse **DA din pagina 13 din LOGIQ Fortis R3.x HDU product specification sheet** *Measurements/Calculations > General B-mode:* *Depth and distance* *Circumference (ellipse/trace)* *Area (ellipse/trace)* *Volume (ellipsoid)*

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	• *% Stenosis (area or diameter)* • *Angle between two lines* • *Dual B-mode capability* **La fel separata este indicat masuratorile Cardiace in B-Mode pagina 21-22 din LOGIQ Fortis R3.x HDU product specification sheet**
M-mod - prezentări listate standarde de măsurări incluse da	M-mod - prezentări listate standarde de măsurări incluse **DA din pagina 13, 22 din LOGIQ Fortis R3.x HDU product specification sheet** *Measurements/Calculations > M-Mode:* *-M-Depth* *-Distance* *-Time* *-Slope* *-Heart rate*
M-mod color prezentări listați standarde de măsurări incluse da	M-mod color prezentări listați standarde de măsurări incluse **DA este acei ca si in M-Mod in prima faza iar in Faza a 2 a este in comun lucru TVI (Doplerului Tisular) care pina la urma rezulta la acesi masuratori de** *Time, Distance, Depth, Heart rate, Slope;* **Rezultatele acestor combianati de masuratori in finala da Fractia de Ejectia. Pagina 11 din LOGIQ Fortis R3.x HDU product specification sheet**
M-mod sa poată fi înregistrat in memorie: minimum 8 sec da	M-mod sa poată fi înregistrat in memorie: - **10 sec da pagina 293/6-7 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Harmonic imaging da	Harmonic imaging **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet** *System Standart Features> Coded harmonic imaging*
DOPPLER Tip Color (CF) prezentări listate standarde de măsurări incluse da	**DOPPLER** Tip Color (CF) prezentări listate standarde de măsurări incluse **DA pagina 13 din LOGIQ Fortis R3.x HDU product specification sheet** *Measurements > General Doppler measurements/calculations:* *Velocity* *Time* *A/B ratio (velocities/frequency ratio)* *PS (Peak Systole)* *ED (End Diastole)* *PS/ED (PS/ED Ratio)* *ED/PS (ED/PS Ratio)* *AT (Acceleration Time)* *ACCEL (Acceleration)* *TAMAX (Time Averaged Maximum Velocity)* *Volume flow (TAMEAN and vessel area)* *Heart rate* *PI (Pulsatility Index)* *RI (Resistivity Index)*

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Pulsativ (PW) prezentări listate standarde de măsurări incluse da	Pulsativ (PW) prezentări listate standarde de măsurări incluse **DA este in total descrisă in modulul vascular. PW find elementul de baza pentru modul vascualr.** *SYS DCCA (Systolic Distal Common Carotid Artery)* *DIAS DCCA (Diastolic Distal Common Carotid Artery)* *SYS MCCA (Systolic Mid Common Carotid Artery)* *DIAS MCCA (Diastolic Mid Common Carotid Artery)* *SYS PCCA (Systolic Proximal Common Carotid Artery)* *DIAS PCCA (Diastolic Proximal Common Carotid Artery)* *SYS DICA (Systolic Distal Internal Carotid Artery)* *DIAS DICA (Systolic Distal Internal Carotid Artery)* *SYS MICA (Systolic Mid Internal Carotid Artery)* *DIAS MICA (Diastolic Mid Internal Carotid Artery)* *SYS PICA (Systolic Proximal Internal Carotid Artery)* *DIAS PICA (Diastolic Proximal Internal Carotid Artery)* *SYS DECA (Systolic Distal External Carotid Artery)* *DIAS DECA (Diastolic Distal External Carotid Artery)* *SYS PECA (Systolic Proximal External Carotid Artery)* *DIAS PECA (Diastolic Proximal External Carotid Artery)* **Valabile in toate modurile de lucru** *PI* *RI* *HR* *Volume flow* *PS* *ED* *MD* *AT* *ACC* *PS/ED si ED/PS* *PVAL.* **Pagina 13 si 11-12 din LOGIQ Fortis Data sheet**
Tisular prezentări listate standarde de măsurări incluse da	Tisular prezentări listate standarde de măsurări incluse da **Find un tip de diagnostic cardica are este inclus in masuratori si calculare Doppler Mode Measurements Pagina 18-19 din LOGIQ Fortis Data sheet.**
Afișare frecvență cu posibilitatea de modificare după caz da	Afișare frecvență cu posibilitatea de modificare după caz **DA pagin 219/5-3, 221/5-5, 1025/13-117 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev.3 pagina 4, 7, 8, 9 din LOGIQ Fortis R3.x HDU product specification sheet.**
Măsurători sunt posibile (timp, viteza, accelerație, contur velocități, ritm cardiac, etc) da	Măsurători sunt posibile (timp, viteza, accelerație, contur velocități, ritm cardiac, etc) **DA pagina 13 din LOGIQ Fortis R3.x HDU product specification sheet.**
Volum ajustabil da	Volum ajustabil **DA este un control activ ca standart pe PW (Pulsativ) si deja in cardica, vezi imaginea la touch pad sub tabelul completat, butonul "Volume"**

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Linia de baza este ajustabila pentru si PW da	Linia de baza este ajustabila pentru si PW **DA este un control activ ca standart pe PW (Pulsativ) si deja in cardica, vezi imaginea la touch pad sub tabelul completat, butonul ”Basline”**
Analiza automata doppler spectral da	Analiza automata doppler spectral **DA este un control activ ca standart pe PW (Pulsativ) si deja in cardica, vezi imaginea la touch pad sub tabelul completat, butonul ”Modif Auto Calcul”**
Scanare oblica cu unghi ajustabil da	Scanare oblica cu unghi ajustabil **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet**
Doppler tisular (TDI) pentru mod B si mod M , opțiune cu posibilitate de ubgradare da	Doppler tisular (TDI) pentru mod B si mod M , opțiune cu posibilitate de ubgradare **DA pagina 11 din LOGIQ Fortis R3.x HDU product specification sheet *TVI***
Posibilitate pentru afișaj color de înaltă definiție da	Posibilitate pentru afișaj color de înaltă definiție **DA pagina 9 din LOGIQ Fortis R3.x HDU product specification sheet *Radiantflow***
Persistenta si senzitivitate ajustabile da	Persistenta si senzitivitate ajustabile **DA pentru fiecar tip de mod de lucru separata pagina 7-8 din LOGIQ Fortis R3.x HDU product specification sheet *Gain, Dynamic Range, Acoustic power, Accumaltion mode.***
Optimizare automata a scării si liniei de baza da	Optimizare automata a scării si liniei de baza **DA pagina 9 din LOGIQ Fortis R3.x HDU product specification sheet**
Vizualizare in mod dual pentru imaginea in Modul B si cea Doppler da	Vizualizare in mod dual pentru imaginea in Modul B si cea Doppler **DA pagina 3 -4 din LOGIQ Fortis R3.x HDU product specification sheet *Simulraneous capability B /PW, B/CW, <u>B/CFM </u>or PDI, V/M triplex B+CFM/PW.***
Posibilitate upgradare cu mod de lucru Panoramic da	Posibilitate **de lucru cu modul Panoramic DA este inclus in completatia standart *LOGIQView* din LOGIQ Fortis R3.x HDU product specification sheet**
Power Doppler da	Power Doppler **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet**
Duplex da	Duplex **DA pagina 3 -4 din LOGIQ Fortis R3.x HDU product specification sheet *Simulraneous capability***
Triplex da	Triplex da **DA pagina 3 -4 din LOGIQ Fortis R3.x HDU product specification sheet *Simulraneous capability***
FUNCȚIONALITĂȚI INCLUSE	FUNCȚIONALITĂȚI INCLUSE
Măsurători digitale	Măsurători digitale **DA pagina 13 din LOGIQ Fortis R3.x HDU product specification sheet**
Diapazon dinamic selectabil da	Diapazon dinamic selectabil **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet *Adjustable dynamic range, inifnite upper level* sau pentru fiecare mod este idnicat *Dynamic range***
Focalizare de transmisie ajustabilă da	Focalizare de transmisie ajustabilă **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet *Continuous dynamic receive focus***
Focalizare de recepție dinamică da	Focalizare de recepție dinamică **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet *Continuous dynamic receive aperture***
Butoane STC disponibile pentru ajustarea gain-ului minim 8 orizontale valabile pe touch monitor da	Butoane STC disponibile pentru ajustarea gain-ului minim 8 orizontale valabile pe touch monitor **DA pagina 4 din**

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	LOGIQ Fortis R3.x HDU product specification sheet *Digital TCG with 8 independent control.*
Măsurători pe reluarea vide da	Măsurători pe reluarea vide **DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet** *Cine Memory/Image Memory*
Măsurători posibile (lungime, suprafața, volum, hip-angle etc) da	Măsurători posibile (lungime, suprafața, volum, hip-angle etc) **DA pagina 13 din LOGIQ Fortis R3.x HDU product specification sheet** *Measurements / Calculations*
Tehnologie de lucru in regim non doppler pentru studiu circulație sangvină indiferent de vitezele de curgere care sânt prezente (Exemplu B-Flow) da	Tehnologie de lucru in regim non doppler pentru studiu circulație sangvină indiferent de vitezele de curgere care sânt prezente (Exemplu B-Flow) **DA B-Flow pagina 3 din LOGIQ Fortis R3.x HDU product specification sheet**
Tehnologie de mărire a imaginei fără a pierde din calitatea sau rezoluția imaginei. (Exemplu HD Zoom) da	Tehnologie de mărire a imaginei fără a pierde din calitatea sau rezoluția imaginei. (Exemplu HD Zoom) **DA pagina 12 din LOGIQ Fortis R3.x HDU product specification sheet** *HD Zoom.*
Inversare Stânga/Dreapta trebuie sa fie posibila da	Inversare Stânga/Dreapta trebuie sa fie posibila **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scaning Parameteres > Image reerse : right/left.*
Mod măsurare automat a grosimii vasului sangvin (IMT) da	Mod măsurare automat a grosimii vasului sangvin (IMT) **DA pagina 15 LOGIQ Fortis R3.x HDU product specification sheet** *Vascular measurements/calculations > Auto IMT.*
Bucla Cine disponibila da	Bucla Cine disponibila **DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet** *CINE Memory / Image Memory*
Afișare duala a imaginilor din memoria CINE este posibila da	Afișare duala a imaginilor din memoria CINE este posibila **DA DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet** *CINE Memory / Image Memory*
Cel puțin 3 frecvente in mod THI da	Cel puțin 3 frecvente in mod THI/ **Harmonic DA în dependență de sonda acest prametru poate devia pagina 16 din DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet** *Probe*
Cel puțin 3 frecvente in regim diferențial THI da	Cel puțin 3 frecvente in regim diferențial THI /**Harmonic DA în dependență de sonda acest prametru poate devia pagina 16 din DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet** *Probe*
Tehnologia "Compound scanning" sau analogic da	Tehnologia "Compound scanning" sau analogic **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet** *SRI si Advance SRI.*
Control unghiului de scanare Minim pentru sonda convexa da	Control unghiului de scanare Minim pentru sonda convexa **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet** *Scanning size (FOV or Angle)*
Sistemul trebuie sa permită vizualizarea micro vasculară cu flux redus da	Sistemul trebuie sa permită vizualizarea micro vasculară cu flux redus **DA pagina 9 din LOGIQ Fortis R3.x HDU product specification sheet** *Radialflow , MVI.*
Sistemul trebuie sa dispună de aplicație pentru vizualizare avansată a micro calcinatelor da	Sistemul trebuie sa dispună de aplicație pentru vizualizare avansată a micro calcinatelor **DA este inclus in stadart find combintie intro sonda matricial ML6-15-D de fregventa inalta si rezolutia inlata a ecografului care**

Anexa 1

2D Speckle tracking-monitorizarea miscarii peretelui cardiac optiune cu posibilitatea ulterioara de dotare da	**creaza o vizulizare a micro cacificatelor , micro vascularizarilor.** 2D Speckle tracking-monitorizarea miscarii peretelui cardiac optiune cu posibilitatea ulterioara de dotare **DA pagina 3 din LOGIQ din LOGIQ Fortis R3.x HDU product specification sheet** *Cardiac Strain (Automatic functin Imaging)*
Tehnologie pentru crea unui câmp de scanare trapezoidal pentru sonda liniara, sau convex deplin pentru sonda cardio (Exemplu Virtual Convex) da	Tehnologie pentru crea unui câmp de scanare trapezoidal pentru sonda liniara, sau convex deplin pentru sonda cardio (Exemplu Virtual Convex) **DA pagina 12 din LOGIQ din LOGIQ Fortis R3.x HDU product specification sheet** *Virtual Convex > Valabila pentur osndele Liniare si Sectoriale.*
FUNCTIE RAPORTARE da	FUNCTIE RAPORTARE **DA pagina 3 din LOGIQ Fortis R3.x HDU product specification sheet** *On-board reporting - Editing a Report*
Posibilitate editare raport final de către utilizator da	Posibilitate editare raport final de către utilizator **DA pagina 1317/13-409 si 1320/13-415 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3** *Report Writer*
Posibilitate printare rapoarte da	Posibilitate printare rapoarte **DA pagina 1317/13-409 si 1320/13-412 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3** *Report Writer*
Posibilitate export rapoarte in format PDF da	Posibilitate export rapoarte in format PDF **DA pagina 1317/13-409 si 1320/13-412 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3** *Report Writer*
FUNCȚIONALITĂȚI OPTIONALE CE POT FI PROCURATE SEPART DE BENIFICIAR Prezentarea tuturor posibilităților pentru tehnologia de 4D cu lista softurilor opționale, si măsurătorilor care pot fi realizate. Da	**FUNCȚIONALITĂȚI OPTIONALE CE POT FI PROCURATE SEPART DE BENIFICIAR** Prezentarea tuturor posibilităților pentru tehnologia de 4D cu lista softurilor opționale, si măsurătorilor care pot fi realizate. **DA** *Omni View, STIC, TUI, VCI-Static, VOCAL II, HDLive* **- softuri pagina 13 din LOGIQ Fortis Product Tree ENEA Rev.5 si pagina 10 din LOGIQ Fortis R3.x HDU product specification sheet.** **Ca masuratori si formule de calcul este Omniview, dsitanta, volume ref. cu imagini clare Ref. Pagina 111 - 116 din LOGIQ Fortis Presentation**
Prezenta tehnologie de postprocesare pentru Mod 4D, cu posibilitate de crearea a imaginei de înaltă rezoluție control lumini, textura, taiere a elementelor care creează umbra. Da	Prezenta tehnologie de postprocesare pentru Mod 4D, cu posibilitate de crearea a imaginei de înaltă rezoluție control lumini, textura, taiere a elementelor care creează umbra. **DA pagina 931/13-23 pin la 939/13-31 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Modificarea dimensiunii regiunii de interes in interiorul căreia se măsoară rigiditatea da	Modificarea dimensiunii regiunii de interes in interiorul căreia se măsoară rigiditatea **DA este o componentea standarta pentru regimul de Elastografie pag. 1023/13-115 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Mod de lucru Stress Echo opțiune cu posibilitate de ubgradare da	Mod de lucru Stress Echo opțiune cu posibilitate de ubgradare **DA pagina 11 din LOGIQ Fortis R3.x HDU product specification sheet**
Funcție de confirmare pentru play-back automat da	Funcție de confirmare pentru play-back automat **DA pagina 1153/13-245 ,1158/13-250 si 1464/13-556, din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Funcție de afișare imagini de referință da	

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	Funcție de afișare imagini de referință **DA pagina 932/13-24 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Modul de lucru cu agenti de contrast, 12 fregvente pentru toate modurile disponibile da	Modul de lucru cu agenti de contrast, 12 fregvente pentru toate modurile disponibile **DA pagina 9 din LOGIQ Fortis R3.x HDU product specification sheet in dependenta de sonda care se va folosi numarul de fregeveta poate sa depaseasca**
Posibilitatea de upgrade cu modul pentru lucru cu agenți de contrast atât in mod B cat si mod Color da	Posibilitatea de upgrade cu modul pentru lucru cu agenți de contrast atât in mod B cat si mod Color **DA pagina 9 din LOGIQ Fortis R3.x HDU product specification sheet**
Funcție de ajustare pentru Frame Rate da	Funcție de ajustare pentru Frame Rate **DA pagina 7 din LOGIQ Fortis R3.x HDU product specification sheet**
Postprocesare a imaginilor pe o stație de lucru de la producătorul echipamentului (Exemplu Echo pack) da	Postprocesare a imaginilor pe o stație de lucru de la producătorul echipamentului (Exemplu Echo pack) **DA Centricity - https://apps.gehealthcare.com/app-products/centricity-universal-viewer**
TRANSDUCTORI "Sistemul are posibilitatea cuplarii unui transductor convex (active Single cristal/ Matricial/ XD clear s-au analogic) pentru aplicații generale ce accepta dispozitiv de biopsie" da	TRANSDUCTORI "Sistemul are posibilitatea cuplarii unui transductor convex (active Single cristal/ Matricial/ XD clear s-au analogic) pentru aplicații generale ce accepta dispozitiv de biopsie" **DA C1-6-D Xdclear, C2-9-D Xdclear, pag. 16-17 din LOGIQ Fortis R3.x HDU product specification sheet.**
Sistemul are posibilitatea cuplării unui transductor linear (active Single cristal/ Matricial/ XD clear s-au analogic) cu aplicații in vizualizare părți mici si țesuturi moi da	Sistemul are posibilitatea cuplării unui transductor linear (active Single cristal/ Matricial/ XDclear s-au analogic) cu aplicații in vizualizare părți mici si țesuturi moi **DA L2-9-D, Xdclear, ML6-15-D, Matrix pagina 18, 19 din LOGIQ Fortis R3.x HDU product specification sheet.**
Sistemul are posibilitatea cuplarii unui transductor linear matricial de inalta frecventa: minim 20 MHz da	Sistemul are posibilitatea cuplarii unui transductor linear matricial de inalta frecventa: minim 20 MHz **DA L6-24-D pagina 18 din LOGIQ Fortis R3.x HDU product specification sheet.**
Sistemul are posibilitatea cuplării unui transductor trans-esofagian da	Sistemul are posibilitatea cuplării unui transductor trans-esofagian **DA IC5-9-D si RIC5-9-D pagina 17, 19 din LOGIQ Fortis R3.x HDU product specification sheet.**
Sistemul are posibilitatea cuplării unor transductori tip creion da	Sistemul are posibilitatea cuplării unor transductori tip creion **DA P2D si P6D pagina 19 din LOGIQ Fortis R3.x HDU product specification sheet**
Transductori multifrecvenționali, minim 12 frecvente da	Transductori multifrecvenționali, minim 12 frecvente **DA Exemplu ML6-15-D pagina 19 din LOGIQ Fortis R3.x HDU product specification sheet B-Mode 7.0, 9.0, 10.0, 11.0, 12.0, 15.0 MHz - 6 Harmonic - 10.0, 12.0, 14.0, 15.0 MHz - 4 PW - 5.0, 6.3, 8.3 MHz - 3 Color - 5.1, 6.1, 7.3, 8.2, 9.2, 10.3, 11.4, 12.4 MHz - 8 Total 21 de fregevente**
PAN/ZOOM imagine în timp real da	PAN/ZOOM imagine în timp real **DA pagina 12 din LOGIQ Fortis R3.x HDU product specification sheet**
imagine înghețată da	imagine înghețată **DA pagina 12 din LOGIQ Fortis R3.x HDU product specification sheet**

Anexa 1

	imagine salvata **DA pagina 12 din LOGIQ Fortis R3.x HDU product specification sheet** *recall- rechemare din imaginiea salvata a unui pacient.*
	STOCARE IMAGINI
STOCARE IMAGINI Capacitate hard disc, tip SSD ≥ 500Gb	Capacitate hard disc, tip SSD **1 TB - pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
Cine memorie ≥ 950 Mb	Cine memorie - **1Gb - 1000 Mb - pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet**
după timpul de scanare da	după timpul de scanare **DA dupa cine loop care se controleaza ca timp pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet**
control timpului maxim de salvare da	control timpului maxim de salvare **DA pagina 293/6-7 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Sistemul trebuie sa dispuna de sistem de achizitie a datelor in format uzual pentru ori si care calculator (AVI, JPG, RAW, PNG pentru o prelucrare ulterioara a imaginilor da	Sistemul trebuie sa dispuna de sistem de achizitie a datelor in format uzual pentru ori si care calculator (AVI, JPEG, RAW, PNG) pentru o prelucrare ulterioara a imaginilor **DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet pagina 296/6-10, 595/9-41 1192/13-284 si 1193/13-285 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Stocarea pe DVD sa poată fi realizata in următoarele formate: DICOM, JPG, BMP, AVI , optiune de ubgradare ulterioar da	Stocarea pe DVD sa poată fi realizata in următoarele formate: DICOM, JPEG, BMP, AVI , **este inclus in standart DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet formtele de inscrierea sint aceleasi.**
DICOM 3.0 da	DICOM 3.0 **DA pagina 6 din LOGIQ Fortis R3.x HDU product specification sheet**
MONITOR FIZIOLOGIC ECG Cablu ECG inclus adult Opțional cu posibilitate de ubgradare da	MONITOR FIZIOLOGIC ECG Cablu ECG inclus adult Opțional cu posibilitate de ubgradare **DA ECG Option pagina 15 din LOGIQ FORTIS Product tree EMEA rev.5**
PACHETE DE ANALIZĂ OB/GYN da	PACHETE DE ANALIZĂ OB/GYN **DA Obstetrical pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
Vascular da	Vascular **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet**
Abdomen da	Abdomen **DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
General da	General **DA este carcterisit ca tip de masurare find un pachet de analiza**
Musculoscheletal da	Musculoscheletal **DA pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet**
Transcranial da	Transcranial **DA TCD inclus in vascular pagina 2, 15 din LOGIQ Fortis R3.x HDU product specification sheet**
Parți moi da	Parți moi **DA Tiroida, Sin, pagina 2 din LOGIQ Fortis R3.x HDU product specification sheet**
Altele Să se indice MONITOR VIZUALIZARE, pliabil Diagonala ≥ 23 inch	Altele Să se indice MONITOR VIZUALIZARE, pliabil Diagonala **23.8 inch pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
Rezoluția minim 1920x1080px, (FULL HD	Rezoluția minim 1920x1080px, (FULL HD) **DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**

Anexa 1

Pe brațe articulat da	Pe brațe articulat **DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
Posibilitate de blocare a brațului articulat al monitorului da	Posibilitate de blocare a brațului articulat al monitorului **DA in regim de transport pagina 161/3-63 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
DIVIZARE MONITOR da MONITOR DE CONTROL, touch-screen Diagonala minim 10 inch	DIVIZARE MONITOR **DA** MONITOR DE CONTROL, touch-screen Diagonala minim **12.1 inch DA din LOGIQ Fortis R3.x HDU product specification sheet**
PLATFORAM DE CONTROL Mișcările stânga si dreapta sus si in jos, motorizat da	PLATFORAM DE CONTROL Mișcările stânga si dreapta sus si in jos, motorizat **DA pagina 150/3-52 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Unitatea este echipata cu suport pentru cablurile transductorilor da	Unitatea este echipata cu suport pentru cablurile transductorilor **DA**
Unitatea trebuie sa dispună de sistem de încălzire pentru gel da	Unitatea trebuie sa dispună de sistem de încălzire pentru gel **DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
Unitatea trebuie sa aibă posibilitatea de conectare a unui monitor extern da	Unitatea trebuie sa aibă posibilitatea de conectare a unui monitor extern **DA HDMI pagina 3 din LOGIQ Fortis R3.x HDU product specification sheet**
Unitatea este echipata cu conector pentru sonda creion da	Unitatea este echipata cu conector pentru sonda creion **DA**
Alimentarea 220/230 V - 50/60 Hz da	Alimentarea 220/230 V - 50/60 Hz **DA pagina 1 din LOGIQ Fortis R3.x HDU product specification sheet**
"UPS integrat sau separat destinat pentru menținerea funcționarii dispozitivului in caz de stingere a luminii accidental" da, min. 20 min. Da	"UPS integrat sau separat destinat pentru menținerea funcționarii dispozitivului in caz de stingere a luminii accidental" da, min. 20 min. **DA Separata Model APC Easy UPS SMV3000CAI 3000VA/2100W**
Imprimanta alb/negru - 1 bucata da	Imprimanta alb/negru - 1 bucata **DA tip termo-printer integrat**
Ieșirile sistemului: Conector USB pentru salvarea imaginilor direct pe stick de memorie sau HDD extern – minim 4 porturi USB da Ieșire video S-VHS sau DVI-D sau alta ieșire video pentru redarea semnalului video la maxim da Ethernet 100BaseTX da Ecograful sa fie pe roti cu posibilitate de blocare a frânelor pentru fiecare roata separata da	Ieșirile sistemului: Conector USB pentru salvarea imaginilor direct pe stick de memorie sau HDD extern – minim 4 porturi USB **DA** Ieșire video S-VHS sau DVI-D sau alta ieșire video pentru redarea semnalului video la maxim **DA HDMI pagina 3 din LOGIQ Fortis R3.x HDU product specification sheet** Ethernet 100BaseTX **DA** Ecograful sa fie pe roti cu posibilitate de blocare a frânelor pentru fiecare roata separata **DA pagina 182/3-84 din LOGIQ Fortis – Basic User Manual 5855997-1EN Rev. 3**
Echipamentul trebuie sa 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 si autorizațiile trebuie sa fie in termen de valabilitate." da	Echipamentul trebuie sa îndeplinească toate condițiile legale pentru punerea pe piață – se vor prezenta următoarele documente: - Certificate de calitate ISO 9001 **DA** - Certificate de calitate ISO 13485 **DA** - CE, Declarație de conformitate **DA** Toate certificatele si autorizațiile trebuie sa fie in termen de valabilitate." **Da**
Perioadă de garanție: minim 24 luni de la punerea în funcțiune pentru echipament si sonde.	Perioadă de garanție: minim 24 luni de la punerea în funcțiune pentru echipament si sonde. **DA**

Anexa 1

Se va anexa o declarație în acest sens." da	Se va anexa o declarație în acest sens." **DA**
Instruirea personalului operator se efectuează la beneficiar, în locația de livrare min. 2 persoane	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.	"Producătorul trebuie să furnizeze piese de schimb, cel puțin 10 ani de la data livrării. Se va anexa o declarație în acest sens." **DA**
Se va anexa o declarație în acest sens." da	
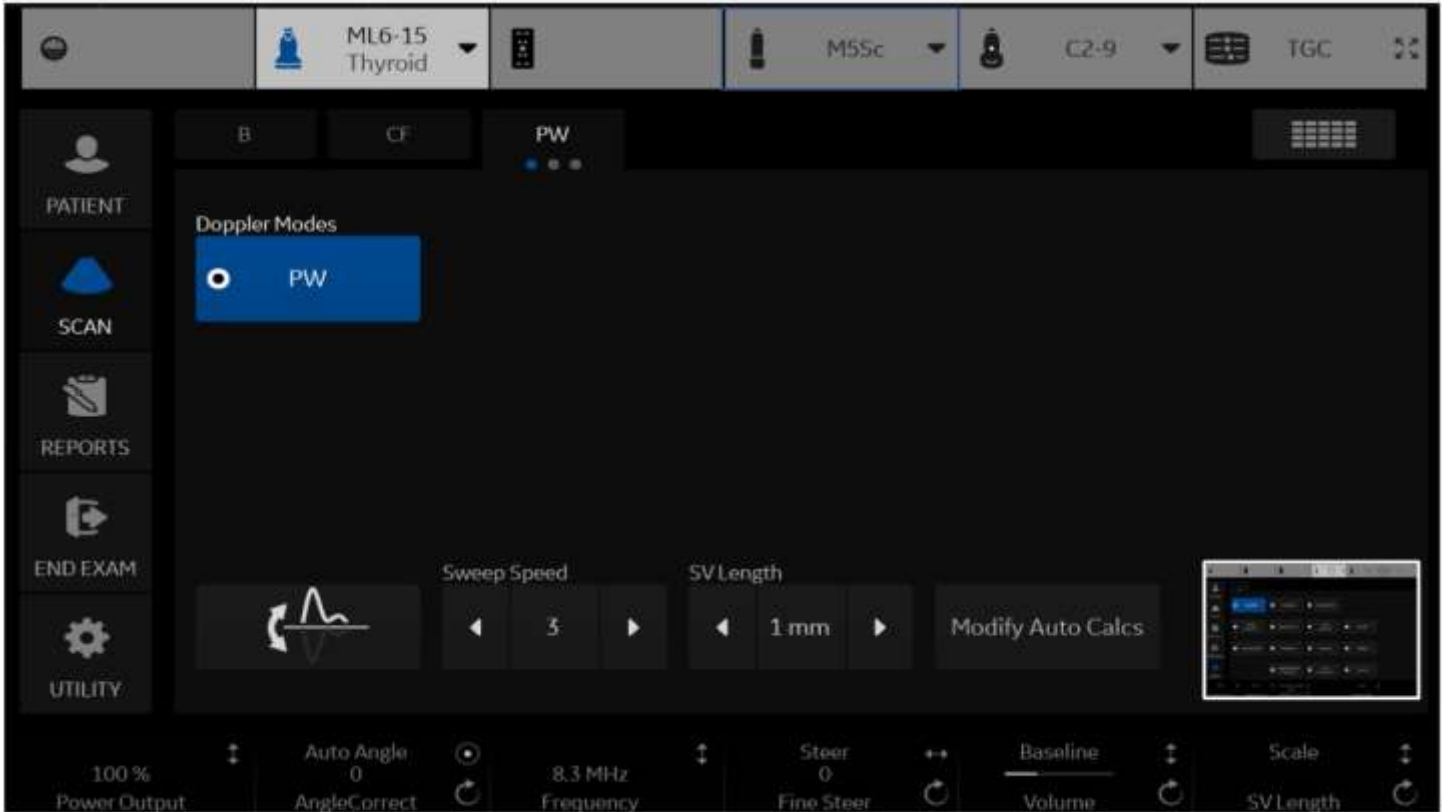
cSound Architecture

Ultrasound for today, platform for tomorrow

The breadth of clinical scenarios in general imaging ultrasound places significant demands on the ultrasound device. A patient who cannot hold her breath while a renal Doppler is performed. A patient whose tendon tear requires sub millimeter resolution. An obese patient needing a liver biopsy. A brain scan of a neonate in an incubator. A liver fibrosis assessment that depends on detecting a shear wave signal thinner than a human hair. In today's demanding clinical environment, the ultrasound machine is a partner in helping the clinician meet every challenge.

GE Healthcare has designed its advanced cSound™ Architecture to put the latest ultrasound technology in the hands of clinicians. It combines the power of XDclear™ probes with a new cSound Imageformer to enable confident diagnoses, provide comprehensive tools, and support concise workflow.

cSound Imageformer

The cSound Imageformer is the data acquisition and processing engine of the new architecture. At its core are cutting-edge NVIDIA® GPUs, the same graphics processing technology that is advancing the driverless car industry and the next generation of video gaming. This technology gives GE ultrasound engineers access to 48 times the data throughput and 10 times the processing power of our previous systems.* This opens up new opportunities, allowing the cSound Imageformer to collect and use more data to create every ultrasound image.

Traditional Beamforming

To understand cSound Imageforming, it helps to review how traditional beamforming works. As shown in Figure 1, traditional beamforming is performed in customized hardware and only the resulting beam or vector data is provided to the flexible, software-based processor that creates the ultrasound images.
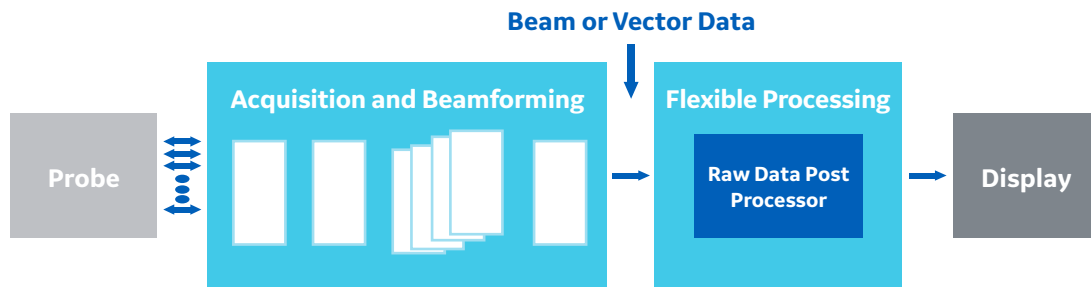

Figure 1. A traditional beamforming architecture.

Traditional Beamforming Steps

1. A transmit event is performed. The return ultrasound data is dynamically received and collected in a single instance of channel memory.

2. The collected channel data is processed to create a particular portion of the image often referred to as one or more vectors or beams.

   Note: If multiple focal depths are desired, steps 1 and 2 are also repeated with a transmit event focused at a different depth.

3. Steps 1-2 are repeated for another portion of the image until the entire image has been created.

Traditional Beamformer

Transmit | Collect Channel Data | Beamform part of image

Image created one line (beam) at a time using limited information.
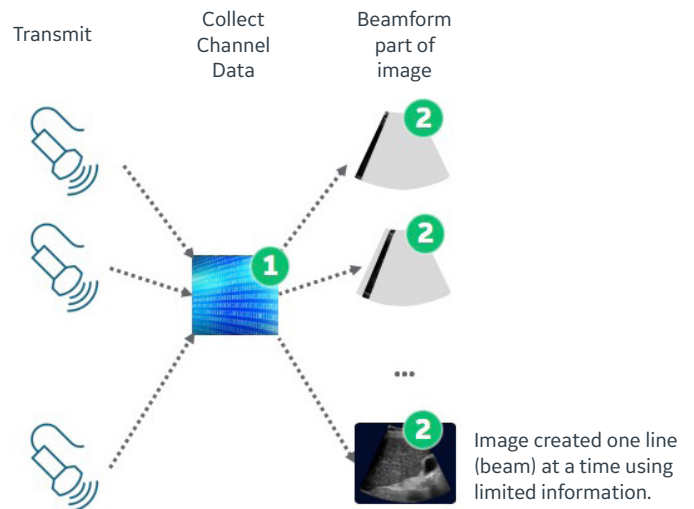
The channel data processed in step 2 and then overwritten still has useful information. However, a traditional beamformer has no means to extract this additional value before the channel data associated with the next transmit event overwrites it.

cSound Imageforming – Methodology

As shown in Figure 2, cSound Imageforming is performed using flexible, GPU-based processing. In contrast to traditional beamforming, the cSound Architecture moves raw channel data at high speeds from the acquisition system to components that perform flexible, software-based processing, including the cSound Imageformer. This channel data can be retained in memory even as channel data from subsequent transmit events is acquired and transferred to the cSound Imagefomer.
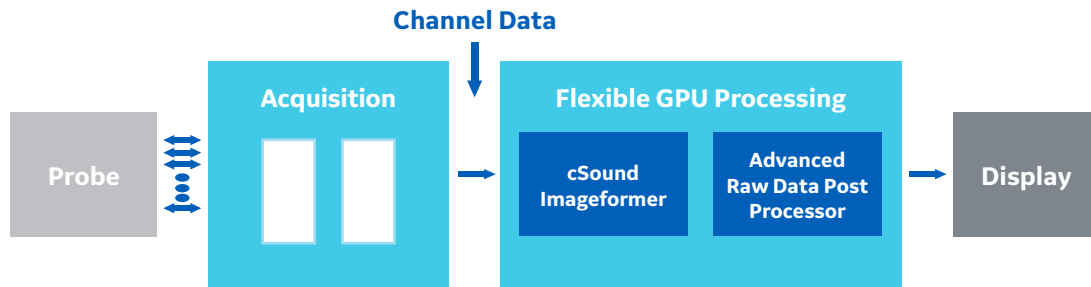

Figure 2. cSound Architecture.

cSound Imageforming Phases

1. Acquisition – A series of transmit events are performed with the return ultrasound data being dynamically received and transferred to memory.

2. Reconstruction – The channel data from all of the transmits is combined to form the image.

New cSound Imageformer

Enabled by **48x** the data throughput and **10x** the processing power

Each image pixel contains more information than is possible with traditional beamforming.
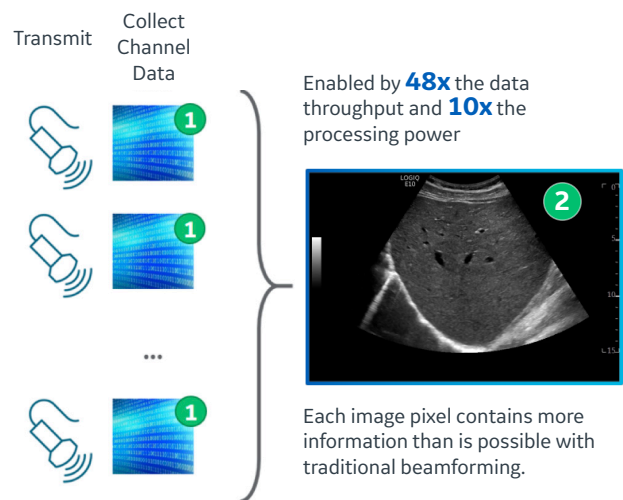
Similar to CT and MRI, cSound Imageforming has a distinct acquisition phase followed by a reconstruction phase. This requires the cSound Architecture to acquire, move and store large amounts of channel data and, once collected, the cSound Imagefomer must be able to process the data at high speeds to enable real-time image reconstruction. The image formation process leverages channel data that would have been discarded in traditional beamforming. This additional data provides numerous samples for every point in the image. The image formation process combines these samples to achieve transmit focus for each point in the image, enhance contrast resolution and deliver fine spatial resolution.

cSound Imageformer – Retrospective Transmit Focus

In traditional beamforming, each transmit event has a transmit focus that is created by adjusting the time delays of individual transducer elements. This generates a curved wave front that converges until reaching a particular depth (the focus depth) and then diverges as it continues to propagate beyond the focus depth. The focus is the location that is insonified from multiple directions.

For each transmit event, the cSound Imageformer collects and saves the receive ultrasound data for each element. This is referred to as channel data. *Even when a new transmit event occurs, the channel data associated with previous transmit events is retained and not overwritten.*

Individual transmit events are spatially and/or angularly offset from one another creating significant overlap. As a result, for any point in the image, there are multiple transmit events that have insonified the point, each from a different direction. Knowing the spatial locations of a particular point in the image relative to a given transmit event, the cSound Imageformer can retrospectively process the channel data of each intersecting transmit event, and then coherently combine the results to achieve retrospective transmit focus at that point. It is worth noting that noise associated with each transmit beam is independent and therefore sums incoherently while the signal itself sums coherently. This increases the signal-to-noise ratio, further improving contrast resolution throughout the image.

This approach to focusing at each point in an image is possible for all types of transmit events providing there is overlap.

- **Converging waves** – Sound from multiple elements converges at a finite depth relative to the transducer face
- **Plane waves** – Sound from multiple elements is unfocused or essentially focused at an infinite depth
- **Diverging waves** – Sound from multiple elements diverges as if the focus was behind the transducer face

The cSound Imageformer is capable of all types of transmit events, giving engineers the flexibility to optimize the system uniquely depending on the needs of each clinical application.

cSound Imageformer – Retrospective Transmit Focus, an Example

For illustrative purposes consider a simplified scenario, as shown in Figure 3.
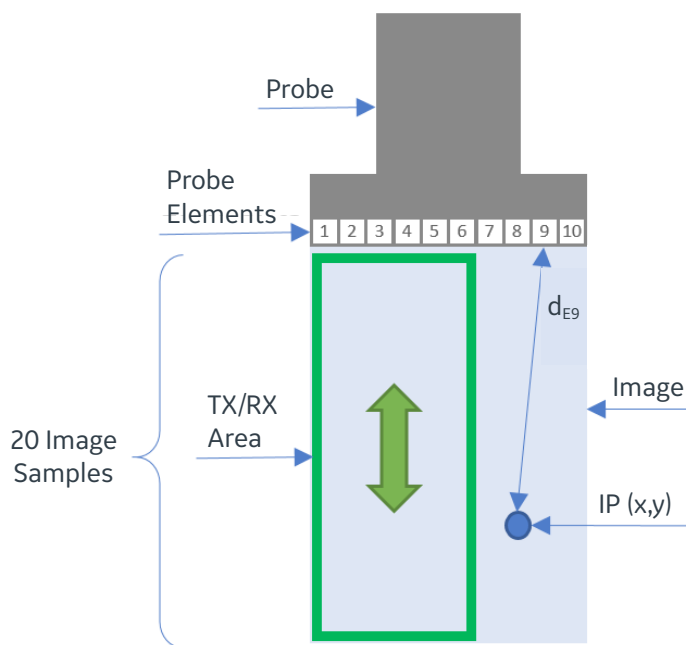
Figure 3. A simplified imaging scenario for illustrating retrospective transmit focus.

- Linear transducer with just 10 elements (E1 – E10)
- Each transmit event uses just six elements for transmitting and receiving. In this case, the first transmit event uses elements 1 through 6 (1-6) and then subsequent transmit events shift by a single element to use elements 2-7, 3-8, 4-9, and 5-10 for a total of 5 transmit events to create the image
- All transmit events are unfocused
- The receive signal is sampled so that 20 samples cover the depth of the image
- Each point in the image can be represented by IP (x,y) where x is the lateral direction and is restricted to the width of the image (which equals the width of the probe) and y is the axial direction and is restricted to the depth of the image
- The distance between IP (x,y) and a particular probe element is defined as d_{EN} where N is the element number 1-10
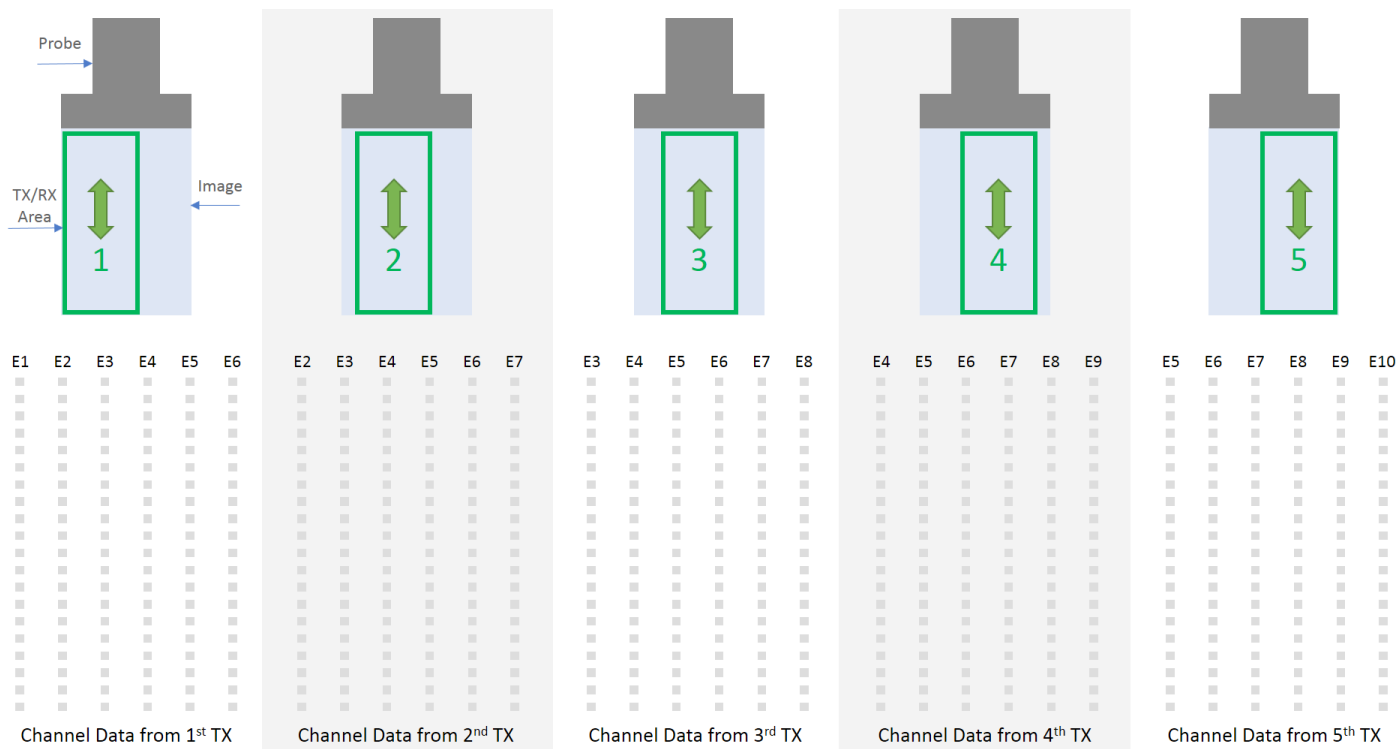
Figure 4. The first transmit (1) occurs and channel data is collected and stored. This is repeated for subsequent transmits (2 through 5) which are each offset from the previous.
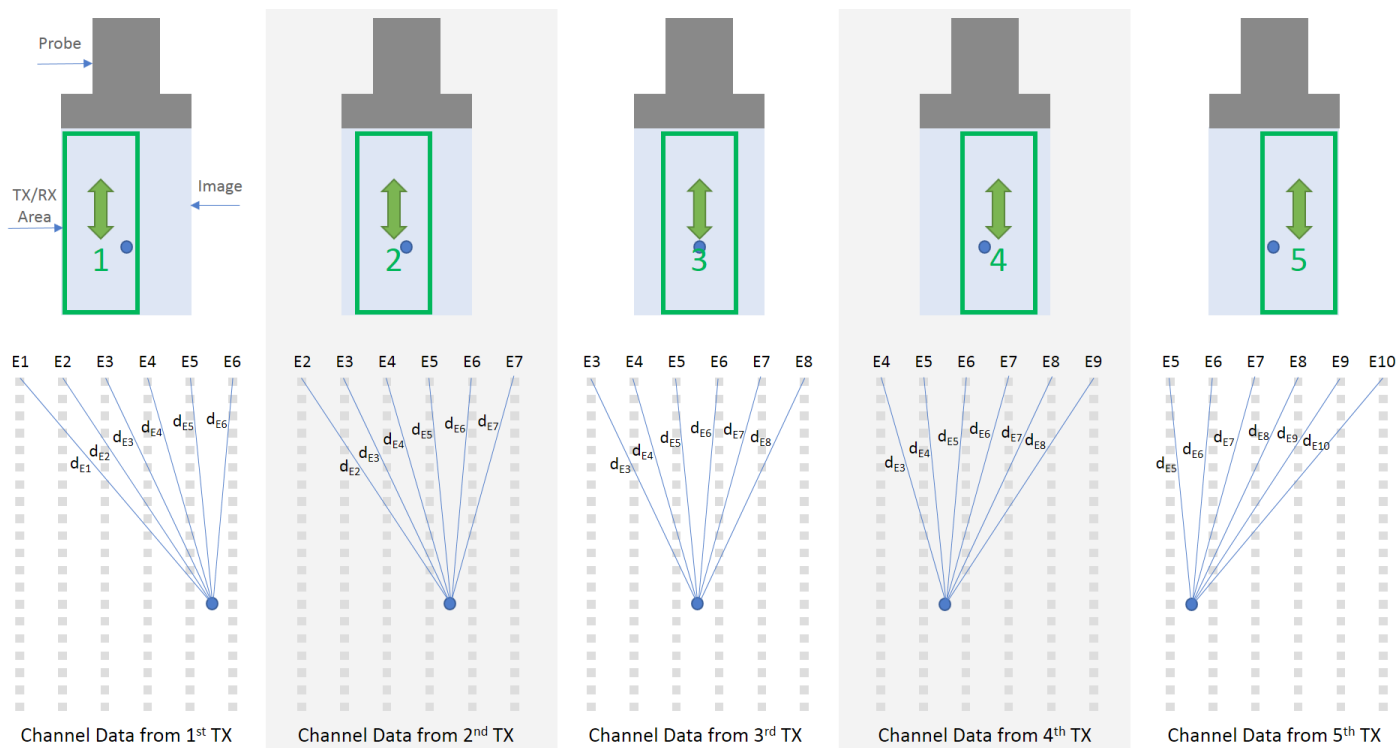
Figure 5. For each set of relevant channel data, the distance between the deep image point (represented by the circle) and each probe element is computed.
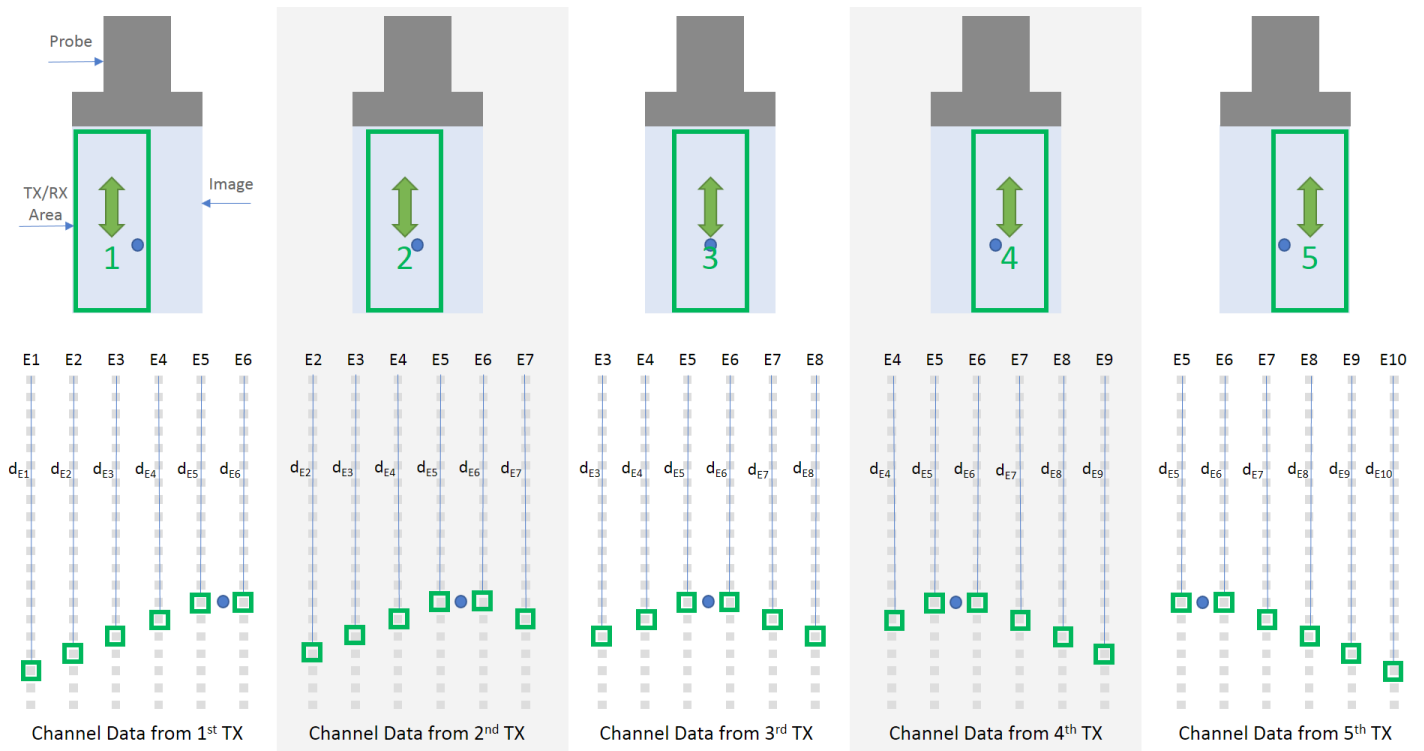
Figure 6. The computed distances between the image point and each element are used to access the channel data that focuses on the image point. The selected channel data from each transmit is coherently summed to determine the signal associated with the image point.
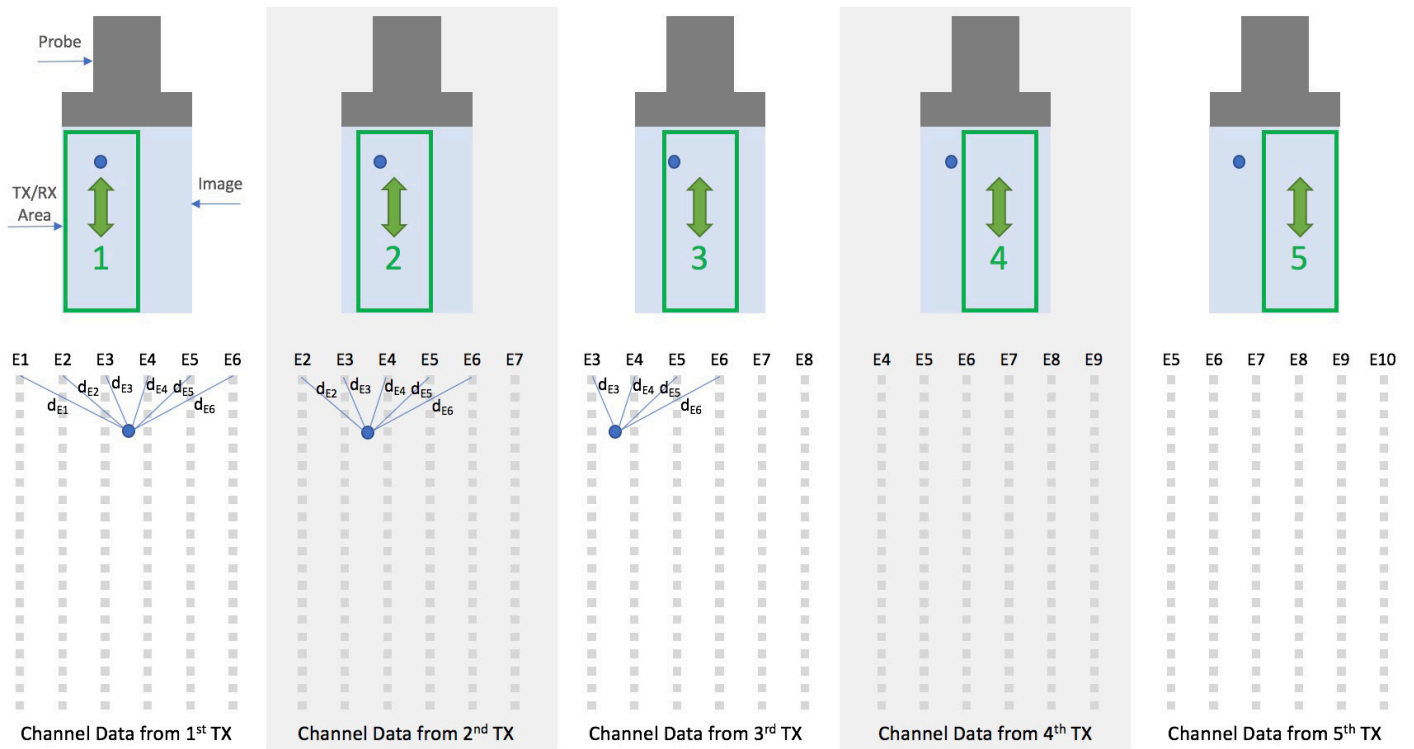
Figure 7. For each set of relevant channel data, the distance between the shallow image point (represented by the circle) and each probe element is computed. Note that transmits 4 and 5 do not overlap with the image point. Further note that some elements, such as E7 and E8 on transmit 3, are not included because of their steep angle relative to the image point.
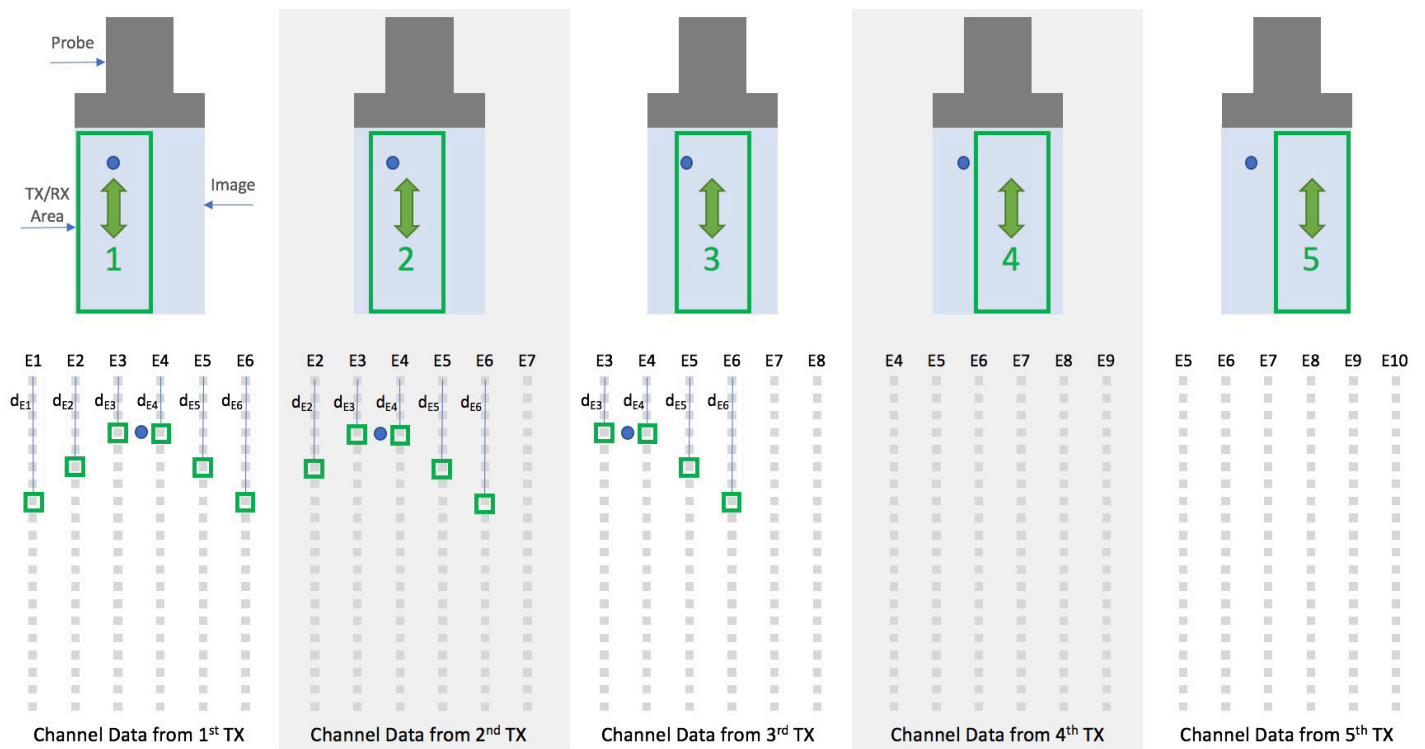
Figure 8. The computed distances between the image point and each element are used to access the channel data that focuses on the image point. The selected channel data from each transmit is coherently summed to determine the signal associated with the image point.

When extending this simplified scenario to the cSound Imageformer, there are additional complexities to consider. For example, the geometry of the transducer and the delay profile of the transmit event impact the computation of the image point to probe element distance and therefore the offset needed to reference the correct channel data. In another difference, the received elements are often larger than the number of transmit elements. Most notably, the sheer volume of data puts extensive demands on the system:

- The large quantity of collected channel data must be reliably and quickly streamed to the channel data memory before additional channel data is collected from the next transmit

- A massive amount of channel memory is required to store the channel data collected from many transmit events

- The retrospective processing of each relevant set of channel data for each point in the image requires intensive, ultra-high-speed, parallel computations to be performed to achieve real-time imaging at very high frame and volume rates

In a less powerful system, the real-time nature of imageforming could be achieved by restricting the amount of data collected by each transmit; speed would come at the expense of image quality. The cSound Architecture, in contrast, is able to keep up without restricting the data, even in radiology's most challenging applications. To put the cSound Architecture's performance in context, it can move the equivalent of multiple DVDs worth of data in one second.

cSound Imageformer – Benefits

Imagine an ultrasound department where no image is acquired with the focal zone in the wrong position. With each point in the image in focus, the user doesn't need to select multiple focal zones or to move the focus position. Additionally, there are no trade-offs between near- and far-field image quality. Deep liver imaging provides detailed data from the capsule to the diaphragm. When biopsying a deep lesion, there is no compromise to needle visualization as it enters the image area. When surveying breast tissue, a clinician is able to see small lesions present from the skin line to the chest wall – all without the user having to make any adjustments.

While greater focal range in ultrasound has traditionally meant lower frame rates, cSound Imageforming actually increases frame rates. It requires a smaller collection of transmit events, a direct result of efficiently using the data collected from each individual transmit event. To understand this efficiency, consider that an ultrasound transmit event can be focused, but the sound energy still travels in many directions; it acts like a flashlight rather than a laser.

Though a flashlight generates maximum light energy in the center of its beam, there is still useful visual information in the light outside of the central beam. Similarly, there is much useful ultrasound image data in the sound that propagates outside the focused direction and the cSound Imageformer is designed to take full advantage of this data.

cSound Imageformer – A Platform for Growth

cSound Imageforming runs on high performance NVIDIA GPUs, but the imageforming algorithms are software based. This affords significant flexibility; the algorithms can be adjusted for specific applications and evolve over time without impacting the underlying hardware architecture. In addition to forming the image, current algorithms can incorporate Adaptive Contrast Enhancement (ACE) and other GE proprietary techniques to boost the real image signal and suppress artifact. And with advances in GPU technology, there is potential to incorporate newer GPUs into the platform, enabling even more sophisticated algorithms.

Advanced Raw Data Post Processor

The improved images resulting from the cSound Imageformer flow into the Advanced Raw Data Post Processor where additional enhancement is performed by spatial compounding, frame averaging, advanced speckle reduction imaging (Advanced SRI), and other functions. The post-processed image data is then mapped to gray scale levels and the scan is converted for display to the operator.

While speckle reduction imaging has been a feature of ultrasound systems for many years, Advanced SRI is GE's most sophisticated algorithm to date, and requires the expanded computational power of the cSound architecture to achieve real-time results. It employs proprietary processing steps at different resolutions of the raw image data to smooth speckle-based artifacts while simultaneously enhancing structures of all sizes within the image. The level of smoothing and enhancement is adjustable by the user.

The "Raw Data" aspect of the Advanced Raw Data Post Processor refers to the fact that image data is saved prior to the processing steps. This allows the user to continue to adjust the processing long after the images have been saved.
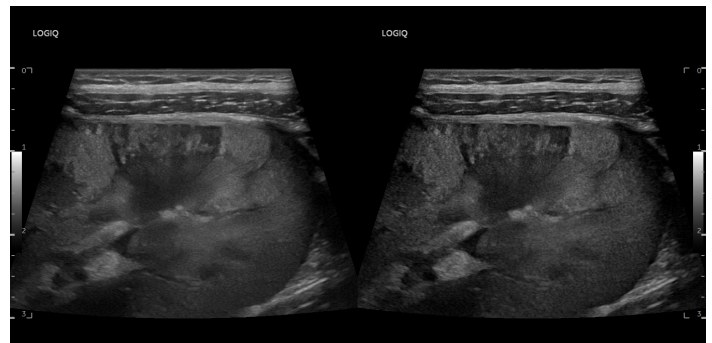
Figure 9. Advanced SRI (right) takes advantage of the increased computational power of the cSound Architecture to identify and enhance structures of all sizes while reducing speckle-based artifacts.

Spatial Compounding + Frame Averaging + NEW Advanced SRI (Proprietary) + Other Processing Functions = Advanced Raw Data Processor
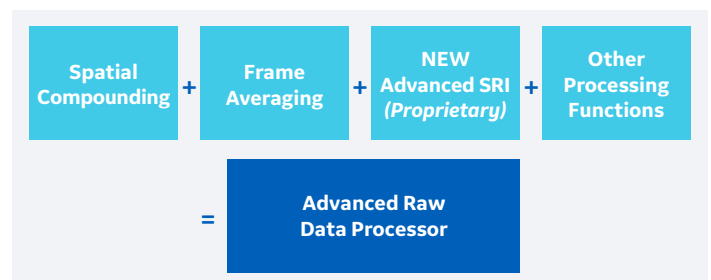
XDclear Probes

While cSound Imageforming provides numerous benefits over traditional beamforming, the quality of the acoustic data coming into the system is still of utmost importance. In combination with the cSound Architecture's state-of-the-art transmit and receive electronics, XDclear transducers help deliver a more powerful, pure, and efficient sound wave with wider bandwidth than traditional GE transducer technology. This results in impressive deep penetration and high resolution, enabling ultrasound to be used effectively on a broad range of patients.
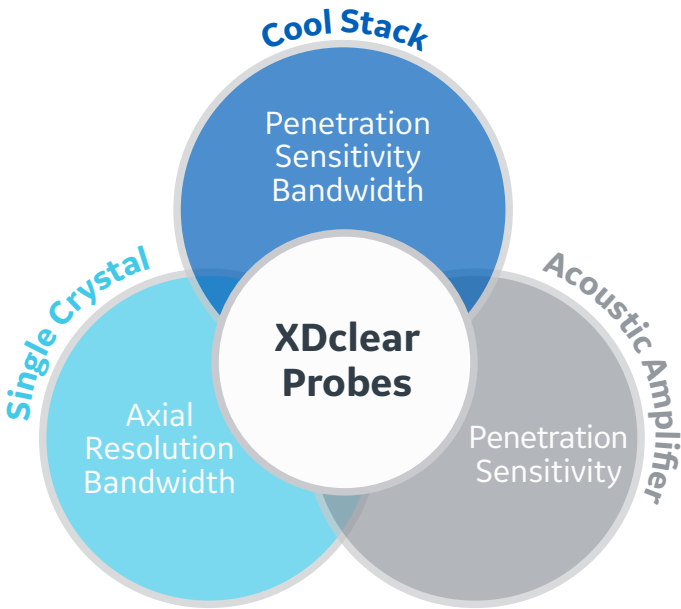
Figure 10. XDclear probes: Derive their superior performance from three key technologies: Single Crystal, Cool Stack, and Acoustic Amplifier.

XDclear transducers are a proprietary combination of advanced materials and innovative design. The XDclear design incorporates an enhanced piezoelectric material, Single Crystal, to generate a high quality acoustic signal. The quality of that signal is preserved through an innovative Acoustic Amplifier design coupled with GE's Cool Stack technology to help optimize energy management. The ability to effectively and efficiently combine these technologies is what makes XDclear extraordinary.
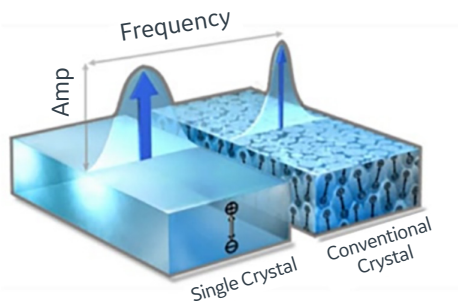
Figure 11. *Single Crystal:* Advanced piezoelectric material that delivers high quality acoustic signal with a wider bandwidth than conventional piezoelectric material.

GE Acoustic Amplifier Evolution
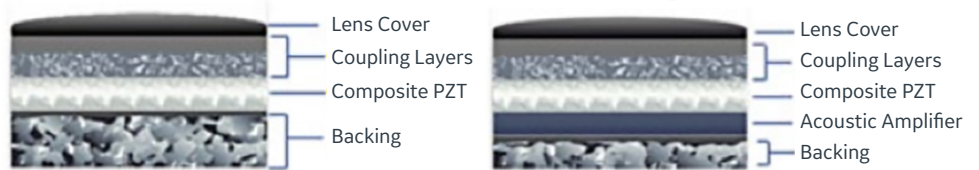
Traditional GE Amplifier

Acoustic Amplifier

Figure 12. *Acoustic Amplifier*: Preserves the acoustic signal through an innovative design that captures and redirects the unused energy that passes through the crystal to enhance sensitivity, axial resolution, and penetration.

XDclear transducers enable deep penetration and resolution. One objective measure of transducer performance is bandwidth: the range of frequencies that the transducer can transmit and receive. Increased bandwidth allows a transducer to cover a broader frequency range, which makes it possible to achieve deep penetration and high resolution, as well as enhanced performance in harmonic imaging.

With sufficient bandwidth, one transducer can cover the range of acoustic frequencies that previously required separate transducers. XDclear transducers with Single Crystal materials have measurably enhanced bandwidth, achieving a -6 dB fractional bandwidth that can exceed 100 percent compared with 70 to 80 percent for traditional GE transducers. The result is a new level of penetration, resolution, and sensitivity in GE transducer performance.
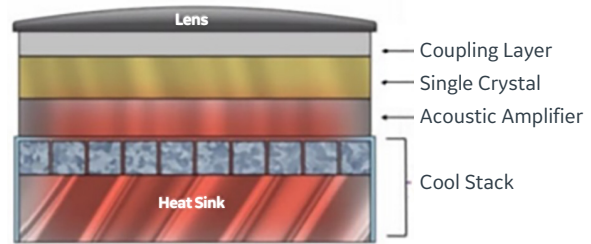
Figure 13. *Cool Stack:* Optimizes energy usage via patented technology integrated into the transducer's internal architecture; it relieves inherent heat generation that can otherwise reduce sensitivity and penetration.
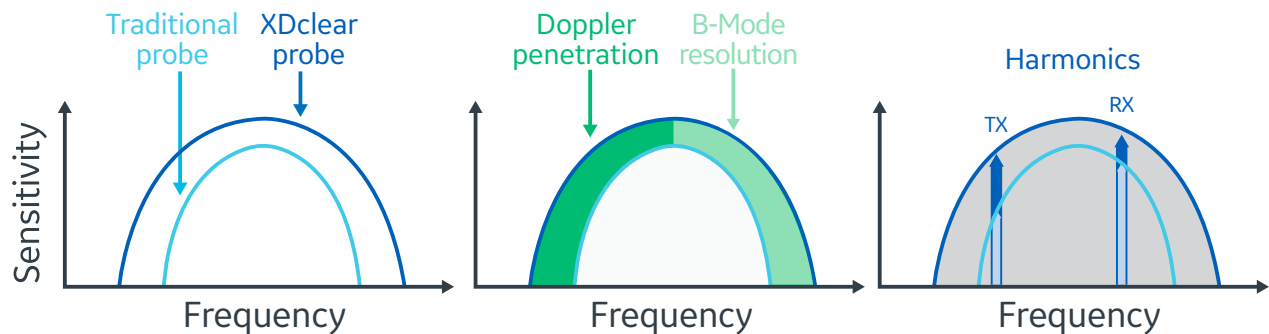
Figure 14. XDclear probe performance benefits are derived from improved sensitivity and wider bandwidth.

cSound Architecture Summary

The cSound Architecture leverages next-generation data rates and processing power that were previously unavailable, allowing significantly more data to be collected and used to create every image. This additional data is used to achieve focus at every point and to increase contrast and spatial resolution— all while significantly improving frame rates. Combined with the performance advantages of XDclear probes and the Advanced Raw Data Post Processor, these advancements make the cSound Architecture an excellent imaging system for today and its flexible design makes it a powerful imaging platform for tomorrow.

*As compared to the LOGIQ™ E9.

EC DECLARATION OF CONFORMITY

Following the provisions of the medical devices regulation 2017/745
Following the directive 2011/65/EU, directive 2014/53/EU

We

Manufacturer and manufacturing site	EU Authorized Representative
GE Ultrasound Korea, Ltd.	**GE Medical Systems SCS**
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Jungwon-gu, Seongnam-si	78530 BUC, France
Gyeonggi-do 13204, Republic of Korea	SRN: FR-AR-000000344
SRN: KR-MF-000001860	

Declare under our sole responsibility that the device:

LOGIQ Fortis
Basic UDI-DI: **8406821BUG00214GZ**

Identification number:

REF Catalog	H-Catalog Number	UDI-DI
LOGIQ Fortis HDU	**H43302LA**	**00195278405326**
LOGIQ Fortis LCD	**H43302LB**	**00195278405333**

Intended Purpose: The LOGIQ Fortis is a general-purpose diagnostic ultrasound system intended for use by qualified and trained healthcare professionals for ultrasound imaging, measurement, display and analysis of the human body and fluid.

EMDN Code: **Z110401**
EMDN Description: Ultrasound Scanners

GMDN Code: **40761**
GMDN Description: General-purpose ultrasound imaging system

UMDNS Code: **15-976**

Classification: **IIa**
Classification rule (Annex VIII): **Rule 10, Class: IIa**

To which this declaration relates is in conformity with the requirements of the medical devices regulation 2017/745 that 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 (RoHS) and the directive 2014/53/EU on the radio equipment (RED).

This conformity is based on the following elements:

- Technical Documentation reference: DOC2379389, of the product to which this declaration relates.
- EC certificate No. HZ 2004702-01:
    - Conformity assessment procedure followed: Annex IX of the medical device regulation 2017/745
    - Delivered by TUV Rheinland LGA Products GmbH (Notified Body n° 0197)

This EC declaration of conformity is the initial release.

SIGNATURE:

Date of issue: 13-12-2021
Place of issue: China
Name: Qingmeng Chen
Function: Regulatory Affairs Program Manager
Signature:

Qingmeng Chen

ADDENDUM TO THE EC DECLARATION OF CONFORMITY
LOGIQ Fortis including accessories and components
dated 13-12-2021

Product Description	H-Catalog Number[1]
Ultrasound Console	
LOGIQ Fortis HDU Console	H43302LA / 6602000
LOGIQ Fortis LCD Console	H43302LB / 6601000
Probe Options[2]	
IC5-9-D	H40442LK
ML6-15-D	H40452LG
L8-18i-D	H40452LL
C2-9-D (XDClear)	H40462LN
C1-6-D (XDClear)	H40472LT
C1-6VN-D (XDClear)	H40472LW
C2-9VN-D (XDClear)	H40472LY
C3-10-D (XDClear)	H40482LB
M5Sc-D (XDClear)	H44901AE
L2-9-D	H44901AI
L2-9VN-D	H44901AJ
6Tc-RS	H45551ZE
C2-7-D	H46422LM
C2-7VN-D	H46422LN
P2D	H4830JE
RIC5-9-D	H48651MS
RAB6-D	H48681MG
P6D	H4830JG
BE9CS-D	H40482LE
L3-12-D	H48062AA
6S-D	H45021RR
L6-24-D Probe	H4920HF
TEE Probe Accessories[2]	
TEE RS-DLP Adapter	H46352LK
Adult TEE Clip-on Bite Guard	H45511EE
Adult TEE Clip-on Bite Guard Opr.	H45521CB
Adult TEE Scanhead Protection Cover	H45521CK
Adult TEE Conventional Bite Guard	H45521JH
BITE HOLE INDICATOR	H45531HS
TEE STORAGE RACK	H45551NM
Software Options	
Advanced Security	H46622LL
Coded Contrast	H43332LA
Parametric Imaging	H43332LB
Cardiac AFI	H46622LN
LOGIQ Exx DVR	H4918DR
Report Writer	H46622LR
Stress Echo	H46622LS
Tricefy	H46622LT
LOGIQ Apps	H46622LW
KOIOS SW	H46622LY
LOGIQ Exx KOIOS Thyroid	H4920KT
LOGIQ E10 KOIOS INSTALL	H4919KI

Product Description	H-Catalog Number[1]
KOIOS 3.x INSTALL	H4921KY
Scan Assistant	H46622LZ
Advanced Probes	H46612LS
AUTO IMT	H46612LT
B Steer+	H46612LW
B-FLOW	H46612LY
Compare Assistant	H46612LZ
DICOM	H46622LA
FLOW QA	H46622LB
Measure Assist Breast	H46622LC
Measure Assist OB	H46622LD
Elastography	H43332LC
Elasto QA	H43332LD
Shear Wave Elastgraphy	H46622LE
LOGIQ Exx SRI HD Type2	H4920SR
UGAP	H46622LH
SonoNT SonoIT	H46622LJ
LOGIQ Exx VNAV Image	H4920VR
Hepatic Assistant - SWE-UGAP	H43332LE
Omni View	H43332LF
STIC	H43332LG
TUI	H43332LH
VCI-Static	H43332LJ
VOCAL_II	H43332LK
Thyroid Productivity	H43332LL
Breast Productivity	H43332LM
Vita on Demand	H43332LN
Hardware Options[2]	
CW Doppler	H43342LA
Realtime 4D	H43342LB
ECG Option	H43342LC
Scan on battery option kit	H43342LD
Power Assistant	H43342LE
Volume Navigation	H43342LF
Volume Navigation for V-Nav Inside T1	H43372LK
Wireless Option	H43342LG
S-Video Option	H43342LH
Pencil CW	H43342LJ
Peripheral Options[2]	
USB FOOTSWITCH 3 BUTTON	H46732LF
SONY UPD25MD COLOR PRINTR	H4911JT
BW Printer Installation Kit T1	H43342LK
LOGIQ Exx Protective Cover	H4918DC
LOGIQ Exx Inkjet Printer	H4918RP
LOGIQ Fortis High Cabinet	H43342LL
LOGIQ Fortis Low Cabinet	H43342LM
LOGIQ Fortis Side Cabinet	H43342LN
5inch bay Option	H43342LP
An Keyboard Assembly	
AN Keyboard ENGLISH	H43342LR
AN Keyboard GERMAN	H43342LS
AN Keyboard FRENCH	H43342LT
AN Keyboard GREEK	H43342LW
AN keyboard NORWEGIAN	H43342LY

Product Description	H-Catalog Number[1]
AN Keyboard SWEDISH	H43352LA
Accessories[2]	
Ethernet protection Cable	H43272LJ
FC389,ECG CABLE SET	H45521AL
VNav Stand (Offboard)	H4908NS
ECG CABLE - AHA STYLE	H4910EC
VNav NEEDLE TRACKING	H4910NT
VNav VirtuTRAX Starter Kit	H4910NY
ECG Cables IEC Style	H4911JC
VNav Virtual Tracker	H4911NG
VNav Active Tracker kit	H4913AT
VNav Needle Tracking storage insert	H4913NS
VNav Needle Tracking Kit - 18/20g or less	H4913NT
VNav ETRAX 12 14G ST KT	H4913NU
VNav ETRAX 14 16G ST KT	H4913NV
VNav Probe sensors	H4913PS
VNav MR Active Tracker	H4915MT
Small Probe Holder	H43352LC
VERTICAL TV PROBE HOLDER	H43352LD
TVTR Probe Holder	H43352LE
PROBE CABLE HANGER	H44412LA
OPTION TRAY BOX	H43372LF
OPTION TRAY Bracket	H43372LG
Power Cords Destination Sets	
Power Cord 220V for EU	H46342LZ
Power Cord DK STD C13 GRY	H46692LK
DESTINATION SET UK	H46712LM
DESTINATION SET SWISS	H46712LS
DESTINATION SET DENMARK	H46712LT
DESTINATION SET ITALY	H46722LD
V-nav Options[2]	
ML6-15 M_BPSY_TRU3D_SKIT	H40432LK
C3-10 VNav Holder Starter Kit	H40482LF
IC5-9 V NAV BRACKET	H4908NF
L8-18I V NAV BRACKET	H4908NH
M5S V NAV BRACKET	H4908NM
Biopsy Kits[2]	
E721 STARTER KIT	E8385MJ
IC5-9-D Reusable Biopsy Guide	H40412LN
ML6-15 M_BIOPSY_SKIT	H40432LJ
C2-7 Biopsy Kit	H40482LK
C2-7 Biopsy Kit Stainless	H40482LL
L2-9 Needle Guide Starter Kit	H44901AM
M5Sc-D Biopsy Bracket	H45561FC
RAB BIOPSY STARTER KIT	H46701AE
RIC5-9-D Biopsy Guide	H46721R
C2-9 Biopsy Starter Kit	H4913BA
C1-6-D Verza Biopsy Starter Kit	H4917VB
C1-6-D Biopsy Starter Kit	H4913BB
L3-12-D Biopsy Kit	H48302AA
RAB6-D BIOPSY STARTER KIT	H48681ML
BE9CS Biopsy Kit 742-401	H42742LJ

Document number: DOC2565892

Notes:

[1] *H-Catalog number identifies the device(s) in the manufacturer's catalog and is usually included on commercial documents like sales contract, order processing documents and shipping documents.*

[2] *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 Ultrasound Korea Ltd. has verified the mutual compatibility of the devices in combination with LOGIQ Fortis and included relevant information to users with the LOGIQ Fortis instructions for use.*

End of Document

ATTESTATION CE / *EC CERTIFICATE*

Approbation du Système Complet d'assurance Qualité/ *Approval of full Quality Assurance System*

ANNEXE II excluant le point 4 Directive 93/42/CEE relative aux dispositifs médicaux

ANNEX II excluding section 4 Directive 93/42/EEC concerning medical devices

Pour les dispositifs de classe III, un certificat CE de conception est requis

For class III devices, a EC design certificate is required

Fabricant / *Manufacturer*

GE ULTRASOUND KOREA, Ltd.

9, Sunhwan-ro 214beon-gil, Jungwon-gu,

SEONGNAM-SI, GYEONGGI-DO, REPUBLIC OF KOREA

Catégorie du(des) dispositif(s) / *Device(s) category*

Dispositif ou système de diagnostic par ultrasons

Ultrasound diagnostic device or system

Voir document complémentaire GMED / See GMED additional document

n° 36988

GMED atteste qu'à l'examen des résultats figurant dans le rapport référencé P183396, P601203, le système d'assurance qualité - pour la conception, la production et le contrôle final - des dispositifs médicaux énumérés ci-dessus est conforme aux exigences de l'annexe II excluant le point 4 de la Directive 93/42/CEE.

GMED certifies that, on the basis of the results contained in the file referenced P183396, P601203, the quality system - for design, manufacturing, and final inspection - of medical devices listed here above complies with the requirements of the Directive 93/42/EEC, annex II excluding section 4.

La validité du présent certificat est soumise à une vérification périodique ou imprévue

The validity of the certificate is subject to periodic or unexpected verification

Début de validité / *Effective date* : **September 14th, 2020 (included)**

Valable jusqu'au / *Expiry date* : **May 26th, 2024 (included)**

Lionel DREUX

Certification Director

GMED - 7697 rev. 18
Modifie le certificat 7697-17

GMED_b2p3_new2020-V0-04-

Document complémentaire GMED n° 36988 rev. 0
GMED additional document n° 36988 rev. 0
Dossiers / *Files* N° P183396, P601203

page 1 / 2

Délivré à Paris le 14/09/2020
Issued in Paris on 09/14/2020
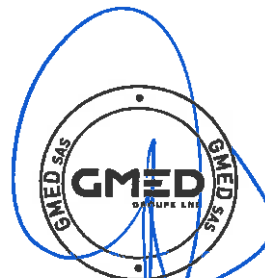
Ce document complémentaire GMED n° 36988 rev. 0 atteste de la validité du certificat CE n° 7697 rev. 18 au regard des informations listées ci-dessous.

This GMED additional document N° 36988 rev. 0 attests to the validity of CE certificate n ° 7697 rev. 18 with regard to the information listed below.

Fabricant / *Manufacturer*:

GE ULTRASOUND KOREA, Ltd.
9, Sunhwan-ro 214beon-gil, Jungwon-gu,
SEONGNAM-SI, GYEONGGI-DO, REPUBLIC OF KOREA

Identification des dispositifs / *Identification of devices*

Désignation du dispositif / Accessoires marqués CE *Device designation / CE marked accessories*	Réf commerciale du dispositif ou code article *Device commercial reference or article code*	Classe du DM *MD class*
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**LOGIQ P7**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**LOGIQ P8**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**LOGIQ P9**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**LOGIQ P10**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**VOLUSON S6**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**VOLUSON S8**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**VOLUSON S8t**	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	**VOLUSON S10**	IIa

Lionel DREUX
Certification Director

Document complémentaire GMED n° 36988 rev. 0
GMED additional document n° 36988 rev. 0
Dossiers / *Files* N° P183396, P601203

page 2 / 2

Délivré à Paris le 14/09/2020
Issued in Paris on 09/14/2020

Désignation du dispositif / Accessoires marqués CE *Device designation / CE marked accessories*	Réf commerciale du dispositif ou code article *Device commercial reference or article code*	Classe du DM *MD class*
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	VOLUSON S10 Expert	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	VOLUSON P6	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	VOLUSON P8	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	VOLUSON SWIFT	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	VOLUSON SWIFT+	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	LOGIQ S8	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	LOGIQ S7 Expert	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	LOGIQ S7 Pro	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	LOGIQ S7 XDclear2.0	IIa
Dispositif ou système de diagnostic par ultrasons *Ultrasound diagnostic device or system*	LOGIQ E10s	IIa

Site couvert et Activités / *Locations and Activities*

Site / *Location*	Activités / *Activities*
GE ULTRASOUND KOREA, Ltd. **9, Sunhwan-ro 214beon-gil, Jungwon-gu,** **Seongnam-si, Gyeonggi-do, REPUBLIC OF KOREA** équivalent à *equivalent to* **GE ULTRASOUND KOREA, Ltd.** **65-1, Sangdaewon-dong, Jungwon-gu,** **Seongnam-si, Gyeonggi-do - 462-120 REPUBLIC OF KOREA**	**Conception, fabrication et contrôle final** *Design, manufacture and final control*

Lionel DREUX
Certification Director

intertek

Total Quality. Assured.

CERTIFICATE
OF REGISTRATION

This is to certify that the management system of:

GE Healthcare Life Sciences

Main site: Amersham Place, Little Chalfont, HP7 9NA Buckinghamshire, United Kingdom

Additional sites according to appendix page 1-2

has been registered by Intertek as conforming to the requirements of

ISO 9001:2015

The management system is applicable to:

Sales, service and distribution of chemicals, devices and instruments for Life Sciences

Certificate Number:
45061-02

Initial Certification Date:
19 June 2009

Date of Certification Decision:
11 July 2018

Certificate Expiry Date:
18 June 2021

Certificate Extend Date:
18 March 2023

SWEDAC
ACKREDITERING

Accred. no. 1639
Certification of
Management
Systems
ISO/IEC 17021-1

Thomas Andersson
MD, Business Assurance Nordics

Intertek Certification AB
P.O. Box 1103, SE-164 22 Kista, Sweden

APPENDIX

This appendix identifies the locations by the management system of

GE Healthcare Life Sciences

This appendix is linked to certificate # 45061-02 and cannot be shown nor reproduced without it

GE Healthcare Life Sciences	73/1, Brigade Metropolis, Whitefield Rd7th Floor, Summit B, Garudachar Palya, Mahadevapura Post, 560048 Bangalore, Karnataka, India
GE Healthcare Life Sciences	3-25-1 Hyakunincho Shinjuku-ku, 169-0073 Tokyo, Japan
GE Healthcare Life Sciences	No. 1568 Chunjiang East Road, 311500 Tonglu Zhejiang, China
GE Healthcare Life Sciences	Björkgatan 30, 751 25 Uppsala, Sweden
GE Healthcare Life Sciences	Hahnestraße 3, 37586 Dassel, Germany
GE Healthcare Life Sciences AB	Björkgatan 30, 751 25 Uppsala, Sweden
GE Healthcare Life Sciences	Mariehemsvägen 212, 906 52 Umeå, Sweden
GE Healthcare Life Sciences	Presnenskaya Naberezhnaya, 10, tower C, 12 floor, 123317 Moscow, Russia
GE Healthcare Life Sciences	KM Nishiumeda Building 7-20-1 Fukushim, Fukushima KU, Fukushima, Japan
GE Healthcare Life Sciences	1 Maritime Square 13-01 Habour Front Center, 99253 Singapore, Singapore

APPENDIX

GE Healthcare Life Sciences	1605 Sammamish Rd 302, 98027 Issaquah, Washington, United States
GE Healthcare	Kouterveldstraat 20, 1831 Machelen, Belgium
GE Healthcare Life Sciences	Munzinger Str. 5, 79111 Freiburg im Breisgau, Germany
GE Healthcare Life Sciences	De Rondom 8, 5612 Eindhoven, AP Netherlands
GE Healthcare Life Sciences	Lindesnesveien 208, 4521 Lindesnes, Norway
GE Healthcare Life Sciences	24 Avenue de l'Europé, 78457 FR, Velizy-Villacoublay J, France
GEHC Life Sciences Cardiff	The Maynard Centre, Forest Farm Estate, CF14 7YT Whitchurch, Cardiff [Caerdydd GB-CRD], United Kingdom
GE Healthcare Life Sciences	7F POBA Tower, 343 Hakdong-Ro Gangnam-gu, 135-820 Seoul, South Korea
GE Healthcare Life Sciences	8th Floor, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong, China
GE Healthcare Life Sciences	11F, No. 68, Nanjing East Rd, Section 3, 104 Taipei, Taiwan
GE Healthcare Life Sciences	14 Walkup Dr Westborough, 1581 Westborough, Massachusetts, United States
GE Healthcare Life Sciences	100 Results Way, 1752 Marlborough, United States
GE Healthcare Life Sciences (HyClone Laboratories, Inc.)	925 West 1800 South, 84321 Logan, United States

Certificate

No. Q5 075707 0058 Rev. 02

Holder of Certificate: **GE Healthcare Austria GmbH & Co OG**
Tiefenbach 15
4871 Zipf
AUSTRIA

Facility(ies): GE Healthcare Austria GmbH & Co OG
Tiefenbach 15, 4871 Zipf, AUSTRIA

Design and Development, Production
and Distribution of Diagnostic Ultrasound
Systems, Probes and Standalone Software
for Ultrasound-Image Processing

Certification Mark:

Scope of Certificate: **Design and Development, Production
and Distribution of Diagnostic Ultrasound
Systems, Probes and Standalone Software
for Ultrasound-Image Processing**

Applied Standard(s): EN ISO 13485:2016
Medical devices - Quality management systems -
Requirements for regulatory purposes
(ISO 13485:2016)
DIN EN ISO 13485:2016

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned
above has established and is maintaining a quality management system, which meets the
requirements of the listed standard(s). All applicable requirements of the testing and certification
regulation of TÜV SÜD Group have to be complied with. For details and certificate validity see:
www.tuvsud.com/ps-cert?q=cert:Q5 075707 0058 Rev. 02

Report No.: 713202497

Valid from: 2021-11-20
Valid until: 2024-04-23

Date,   2021-11-11

Christoph Dicks
Head of Certification/Notified Body

Current issue date: 28 September 2020
Expiry date: 27 September 2023
Certificate identity number: 10293605

Original approval(s):
ISO 14001 - 28 September 2017

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

GE HEALTHCARE EUROPE SALES AND SERVICES

283 rue de la Minière, 78530 BUC, France

has been approved by Lloyd's Register to the following standards:

ISO 14001:2015

Approval number(s): ISO 14001 – 0043295

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by: LRQA France SAS

for and on behalf of: Lloyd's Register Quality Assurance Limited

UKAS
MANAGEMENT
SYSTEMS
001

Certificate Schedule

Location	Activities
GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices.
GEMS SCS 24 avenue de l'Europe, 78140 VELIZY VILLACOUBLAY, France	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Austria GmbH & Co OG Technologiestr. 10, 1220 WIEN, Austria	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare BVBA Kouterveldstraat 20, Eagle Building, 1831 DIEGEM, Belgium	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Bulgaria LTD Dragan Tzankov Blvd. 36, World Trade Centre, 1040 SOFIA, Bulgaria	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Česká republika, s.r.o. Bucharova 2641/14, Explora Business Centre, Jupiter Building, 158 00 PRAHA 5, Czech Republic	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

UKAS
MANAGEMENT
SYSTEMS
001

Certificate Schedule

Location	Activities
GE Healthcare Danmark A/S Park Allé 295, 2605 BRONDBY, Denmark	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Finland Oy Kuortaneenkatu 2, 00510 HELSINKI 18, Finland	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Information Technologies GmbH Munzingerstr. 3a-5, 79111 FREIBURG, Germany	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices.
GE Healthcare GmbH Beethovenstr. 239, 42655 SOLINGEN, Germany	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare S.A. 8-10 Sorou, Maroussi, 151 25 ATHENS, Greece	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Magyarország Kft. Bence utca 3., 1138 BUDAPEST, Hungary	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

UKAS
MANAGEMENT
SYSTEMS
001

Certificate Schedule

Location	Activities
GE Medical Systems Ireland Ltd Unit F5, Centre Point Business Park, Oak Drive DUBLIN 12, Ireland	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Italia SpA Via Galeno 36, 20126 MILAN, Italy	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
General Electric Kazakhstan LLP 308 of. "Grand-Alatau" Business Center, "Grand-Alatau" Business Center, Almaty, 050040, Kazakhstan	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Nederland BV De Wel 18, Building C, 3871 MV HOEVELAKEN, The Netherlands	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Norge AS Vitaminveien 1A, 0485 OSLO, Norway	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Polska Sp.z o.o. ul. Wołoska 9, 02-583 WARSAW, Poland	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

UKAS
MANAGEMENT
SYSTEMS

001

Certificate Schedule

Location	Activities
General Electric Healthcare Portugal, Sociedade Unipessoal, Lda. Avenida do Forte 6 6-A, Ed. Ramazzotti, 2790-072 CARNAXIDE, Portugal	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems SRL. 301-311 Barbu Vacarescu St., District 2, Lakeview Building, 3rd floor, 020276 BUCHAREST, Romania	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare LLC 10 Presnenskaya embankment, premise III, 12 floor, room 1, MOSCOW, 123112, Russian Federation	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Holdings d.o.o. Bulevar Mihaila Pupina 6/17 PC,, Usce, Novi Beograd, BELGRADE, 11070, Republic of Serbia	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
General Electric International (Slovensko), s.r.o. Prievozská 4, 821 09 BRATISLAVA, Slovakia	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
General Electric Healthcare España, S.A.U Calle Gobelas 35-37, Urbanizacion La Florida, 28023 MADRID, Spain	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

UKAS
MANAGEMENT
SYSTEMS

001

Certificate Schedule

Location	Activities
GE Healthcare Sverige AB Vendevägen 89, 182 32 DANDERYD, Sweden	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Schweiz AG Europastrasse 31, 8152 GLATTBRUGG, Switzerland	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Pollards Wood, Nightingales Lane, Chalfont St Giles, HP8 4SP, Buckinghamshire, United Kingdom	**ISO 14001:2015** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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Current issue date: 21 September 2020
Expiry date: 27 September 2023
Certificate identity number: 10293595

Original approval(s):
ISO 45001 - 28 September 2017

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

GE HEALTHCARE EUROPE SALES AND SERVICES

283 rue de la Minière, 78530 BUC, France

has been approved by Lloyd's Register to the following standards:

ISO 45001:2018

Approval number(s): ISO 45001 – 00027009

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by: LRQA France SAS

for and on behalf of: Lloyd's Register Quality Assurance Limited

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Certificate Schedule

Location	Activities
GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GEMS SCS 24 avenue de l'Europe, 78140 VELIZY VILLACOUBLAY, France	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare BVBA Kouterveldstraat 20, Eagle Building, 1831 DIEGEM, Belgium	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Bulgaria LTD Dragan Tzankov Blvd. 36, World Trade Centre, 1040 SOFIA, Bulgaria	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Česká republika, s.r.o. Bucharova 2641/14, Explora Business Centre, Jupiter Building, 158 00 PRAHA 5, Czech Republic	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Finland Oy Kuortaneenkatu 2, 00510 HELSINKI 18, Finland	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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Certificate Schedule

Location	Activities
GE Medical Systems Information Technologies GmbH Munzingerstr. 3a-5, 79111 FREIBURG, Germany	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare GmbH Beethovenstr. 239, 42655 SOLINGEN, Germany	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare S.A. 8-10 Sorou, Maroussi, 151 25 ATHENS, Greece	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Magyarország Kft. Bence utca 3., 1138 BUDAPEST, Hungary	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Ireland Ltd Unit F5, Centre Point Business Park, Oak Drive DUBLIN 12, Ireland	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Italia SpA Via Galeno 36, 20126 MILAN, Italy	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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Certificate Schedule

Location	Activities
GE Medical Systems Polska Sp.z o.o. ul. Wołoska 9, 02-583 WARSAW, Poland	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management. repair and installation of medical devices
General Electric Healthcare Portugal, Sociedade Unipessoal, Lda. Avenida do Forte 6 6-A, Ed. Ramazzotti, 2790-072 CARNAXIDE, Portugal	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems SRL. 301-311 Barbu Vacarescu St., District 2, Lakeview Building, 3rd floor, 020276 BUCHAREST, Romania	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare LLC 10 Presnenskaya embankment, premise III, 12 floor, room 1, MOSCOW, 123112, Russian Federation	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Holdings d.o.o. Bulevar Mihaila Pupina 6/17 PC,, Usce, Novi Beograd, BELGRADE, 11070, Republic of Serbia	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management. associated with sales, marketing, services, repair and installation of medical devices

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Location	Activities
General Electric International (Slovensko), s.r.o. Prievozská 4, 821 09 BRATISLAVA, Slovakia	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
General Electric Healthcare España, S.A.U Calle Gobelas 35-37, Urbanizacion La Florida, 28023 MADRID, Spain	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Sverige AB Vendevägen 89, 182 32 DANDERYD, Sweden	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Schweiz AG Europastrasse 31, 8152 GLATTBRUGG, Switzerland	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Healthcare Pollards Wood, Nightingales Lane, Chalfont St Giles, HP8 4SP, Buckinghamshire, United Kingdom	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Nederland BV De Wel 18, Building C, 3871 MV HOEVELAKEN, The Netherlands	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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Certificate Schedule

Location	Activities
GE Healthcare Austria GmbH & Co OG Technologiestr. 10, 1220 WIEN, Austria	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
General Electric Kazakhstan LLP 308 of. "Grand-Alatau" Business Center, "Grand-Alatau" Business Center, Almaty, 050040, Kazakhstan	**ISO 45001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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Current issue date: 21 September 2020   Original approval(s):
Expiry date: 27 September 2023   ISO 50001 - 25 January 2018
Certificate identity number: 10293599

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

GE HEALTHCARE EUROPE SALES AND SERVICES

283 rue de la Minière, 78530 BUC, France

has been approved by Lloyd's Register to the following standards:

ISO 50001:2018

Approval number(s): ISO 50001 – 0043293

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

Daniel Oliva Marcilio de Souza

Area Operations Manager - South Europe

Issued by: LRQA France SAS

for and on behalf of: Lloyd's Register Quality Assurance Limited

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Certificate Schedule

Location	Activities
GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices.
GEMS SCS 24 avenue de l'Europe, 78140 VELIZY VILLACOUBLAY, France	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
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GE Healthcare Finland Oy Kuortaneenkatu 2, 00510 HELSINKI 18, Finland	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
GE Medical Systems Information Technologies GmbH Munzingerstr. 3a-5, 79111 FREIBURG, Germany	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices.
GE Healthcare GmbH Beethovenstr. 239, 42655 SOLINGEN, Germany	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.

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GE Medical Systems Italia SpA Via Galeno 36, 20126 MILAN, Italy	**ISO 50001:2018** Sales, delivery, installation, repairing, servicing, commissioning, and decommissioning of GE Healthcare medical devices and multivendor medical devices. Excluding office facility management.
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LOGIQ Fortis R3.x HDU
Product Specification Sheet

Last updated on: Thursday, January 13, 2022

1	**General Specifications**	
2	**Dimensions and Weight** **(Dimensions given with floating keyboard stowed and display tilted for transport)**	
3	Depth	885 mm, 34.8"
4	Height	1250 – 1800 mm, 49 – 71"
5	Weight	85 kg (187.4 lb)
6	Width	530 mm, 20.9" (Caster), 565 mm, 22.2" (Monitor)
7	**Electrical Power**	
8	Voltage: 100 – 240 Vac	
9	Frequency: 50/60 Hz	
10	Power consumption maximum of 0.9 kVA with peripherals	
11	**Console Design**	
12	4 active probe ports	
13	1 inactive probe storage port	
14	Integrated SSD (1 TB)	
15	Integrated DVD-R Multi Drive	
16	On-board storage of thermal printer	
17	Integrated speaker	
18	Integrated locking mechanism that provides rolling lock and caster swivel lock	
19	Integrated cable management	
20	Front and rear handles	
21	Easily removable air filters	
22	Windows 10 64-bit	
23	**User Interface**	
24	**Operator Keyboard**	
25	Operating keyboard adjustable in height and rotation	
26	Ergonomic hard key layout	
27	Interactive back-lighting	
28	Integrated recording keys for remote control of up to 4 peripheral devices or DICOM® devices	
29	Integrated gel warmer	
30	**Touch Screen**	
31	12.1" High-resolution, color, touch, display screen	
32	Interactive dynamic software menu	
33	Brightness adjustment	
34	User-configurable layout	
35	**Monitor**	
36	23.8" Wide screen high-resolution HDU display	
37	Display translation (independent of console)	
38	350 mm, (13.7 in) horizontal (both directions)	
39	150 mm, (5.9 in) vertical	
40	90° swivel (both directions)	
41	Fold-down and lock mechanism for transportation	
42	Resolution: 1920 X 1080	
43	Anti-glare	
44	Viewing angle 89/89/89/89°	
45	Contrast Ratio: >20,000:1	
46	**System Overview**	
47	**Applications**	
48	Abdominal	
49	Obstetrical	
50	Gynecological	
51	Breast	

52	Small Parts
53	Peripheral Vascular
54	Transcranial (adult and neonatal)
55	Pediatric and neonatal
56	Musculoskeletal (general and superficial)
57	Urological
58	Cardiac (adult and pediatric)
59	Interventional
60	Pleural
61	**Operating Modes**
62	B-Mode
63	M-Mode
64	Color Flow Mode (CFM)
65	B-Flow (Option)
66	Extended Field of View (LOGIQView)
67	Power Doppler Imaging (PDI)
68	PW Doppler
69	CW Doppler (Option)
70	Volume Modes (3D/4D) (Option)
71	Anatomical M-Mode
72	Coded Contrast Imaging (Option)
73	Strain elastography (Option)
74	B Steer+ (Option)
75	Shear wave elastography (Option)
76	UGAP (Option) - Ultrasound Guided Attenuation Parameter Imaging
77	**Scanning Methods**
78	Electronic sector
79	Electronic convex
80	Electronic linear
81	Mechanical volume sweep
82	**Probe Types**
83	Sector phased array
84	Convex array
85	Microconvex array
86	Linear array
87	Matrix array
88	Volume probes (4D)
89	Split crystal
90	**System Standard Features**
91	Advanced user interface with high-resolution 12.1" display touch panel
92	Automatic optimization
93	CrossXBeam™ compounding
94	Speckle Reduction Imaging (SRI-HD, Advanced SRI Type 1)
95	Fine angle steer
96	Coded harmonic imaging
97	Virtual convex
98	Patient information database
99	Image archive on integrated CD/DVD and hard drive
100	Advanced 3D
101	Raw data analysis
102	Real-time automatic Doppler calculations
103	OB calculations
104	Fetal trending
105	Multi gestational calculations
106	Hip dysplasia calculations
107	Gynecological calculations
108	Vascular calculations
109	Urological calculations
110	Renal calculations
111	Cardiac calculations
112	InSite™ capability
113	On-board electronic documentation
114	Auto Doppler Assist

115	Privacy and security, including user and rights management
116	LOGIQView
117	External USB printer connection
118	Network printer support
119	HDMI output (available for compatible devices)
120	**System Options**
121	Tricefy®
122	DICOM
123	B-Flow
124	Compare Assistant
125	Auto IMT
126	Scan Assistant
127	Breast productivity package
128	Thyroid productivity package
129	OB measure assistant
130	Quantificative Flow Analysis available with Color Flow/PDI
131	Breast Measure Assistant
132	B Steer+
133	Strain elastography
134	Elastography Quantification
135	Advanced privacy and security (vulnerability scan)
136	Power assistant and scan on battery
137	Storage bins
138	Shear wave Elastography
139	Volume Navigation
140	UGAP
141	Hepatic Assistant
142	Coded Contrast Imaging
143	Stress echo
144	Cardiac Strain (Automatic Function Imaging)
145	On-board reporting
146	TVI
147	Wireless LAN
148	CW
149	DVR
150	Table tools
151	Advanced probes
152	Breast Assistant, Powered by Koios DS™
153	SonoNT SonoIT
154	Advanced SRI Type 2
155	**Peripheral Options**
156	Integrated Option for Digital Color thermal Printer
157	Digital A6 color thermal printer
158	Foot switch, with programmable functionality
159	CRF-200U card reader support (Japan Only)
160	Console protective cover
161	LOGIQ smart device apps	• Photo Assistant • Remote Control
162	**Display Modes**
163	Live and stored display format	• Full size and split screen – both w/ thumbnails. For still and CINE
164	Review image format	• 4x4, and thumbnails. For still and CINE
165	Time line display	• Independent Dual B or CrossXBeam/PW Display • CW • Display formats top/bottom selectable format • Side/side selectable format
166	Virtual convex
167	**Simultaneous capability**
168	B or CrossXBeam/PW
169	B or CrossXBeam/CW (Option)
170	B or CrossXBeam/CFM or PDI
171	B/M
172	B/CrossXBeam
173	B-Flow/PW

174	Real-time Triplex Mode - B or CrossXBeam + CFM or PDI/PW	
175	**Selectable alternating modes**	
176	B or CrossXBeam/PW	
177	B or CrossXBeam + CFM (PDI)/PW	
178	B/CW (Option)	
179	**Multi-image (split/quad screen)**	
180	Live and/or frozen	
181	B or CrossXBeam + B or CrossXBeam/CFM or PDI or B-Flow (Option)	
182	PW/M	
183	Independent Cine playback	
184	**Display Annotation**	
185	Patient name: first, last and middle	
186	Patient ID	
187	Alternate patient ID	
188	Age, sex and date of birth	
189	Hospital name	
190	Date format: three types selectable	• MM/DD/YY • DD/MM/YY • YY/MM/DD
191	Time format: 2 types selectable	• 24 hours • 12 hours
192	Gestational age from	• LMP • GA • EDD • BBT
193	Probe name	
194	Map names	
195	Probe orientation	
196	Depth scale marker	
197	Lateral scale marker	
198	Focal zone markers	
199	Image depth	
200	Zoom depth	
201	B-Mode	• Gain • Dynamic range • Imaging frequency • Frame averaging • Gray map • SRI
202	M-Mode	• Gain • Dynamic range • Time scale
203	Doppler Mode	• Gain • Angle • Sample volume depth and width • Wall filter • Velocity and/or frequency scale • Spectrum inversion • Time scale • PRF • Doppler frequency
204	Color Flow Doppler Mode	• Line density • Frame averaging • Color scale, 3 types: Power, directional PDI and symmetrical velocity imaging • Color velocity range and baseline • Color threshold marker • Color gain • PDI • Spectrum inversion • Doppler frequency
205	Digital TGC with 8 independent controls	
206	Acoustic frame rate	

207	CINE gage, image number/frame number	
208	Body pattern: multiple human and animal types	
209	Application name	
210	Measurement results	
211	Operator message	
212	Displayed acoustic output	• TIS: Thermal Index Soft Tissue • TIC: Thermal Index Cranial (Bone) • TIB: Thermal Index Bone • MI: Mechanical Index
213	% of maximum power output	
214	Biopsy guide line and zone	
215	Heart rate	

216	**General System Parameters**	
217	**System Setup**	
218	Pre-programmable categories	
219	User programmable preset capability	
220	Factory default preset data	
221	Languages: English, French, German, Spanish, Italian, Brazilian, Portuguese, Russian, Greek, Swedish, Danish, Dutch, Finnish, Norwegian	
222	OB Report Formats including Tokyo Univ., Osaka Univ., USA, Europe and ASUM and WHO	
223	User defined annotations	
224	Body patterns	
225	Customized comment home position	
226	EZ Imaging: Simplified user interface for high volume workflow	
227	**Complete user manual available on board through Help (F1)**	
228	User manual and service manual are included in USB stick with each system. A printed manual is available upon request.	
229	**CINE Memory/Image Memory**	
230	1 GB of CINE memory	
231	Selectable CINE sequence for CINE review	
232	Prospective CINE mark	
233	Measurements/calculations and annotations on CINE playback	
234	Scrolling timeline memory	
235	Dual Image CINE display	
236	Quad Image CINE display	
237	CINE gauge and CINE image number display	
238	CINE review loop	
239	CINE review speed	
240	**Image Storage**	
241	On-board database of patient information from past exams	
242	Storage formats: DICOM	• Compressed/uncompressed • Single/multi-frame • Enhanced (3D/4D) • With/without raw data
243	Export JPEG, JPEG 2000, WMV (MPEG 4) formats	
244	Storage devices:	• USB memory stick: 64 MB to 64 GB (for exporting individual images/clips) • CD-R storage: 700 MB • DVD storage: -R (4.7 GB) • Hard drive image storage: ~830GB
245	Compare previous exam images with current exam	
246	Reload of archived date sets	
247	Network storage support for import, export, DICOM read, SaveAs, MPEGVue	
248	**Connectivity**	
249	Ethernet network connection	
250	Wireless LAN 802.11ac/a/b/g/n (Option)	
251	DICOM 3.0	• Verify • Print • Store • Modality worklist • Storage commitment • Modality performed procedure step (MPPS) • Media exchange • Off network/mobile storage queue • Query/retrieve
252	Public SR template	
253	Structured Reporting – compatible with vascular and OB, cardiac and breast standard	
254	InSite capability	
255	Advanced privacy and security (Option)	

256	**Physiological input panel (Option)**	
257	Physiological input	• ECG, 1 channel • PCG, 1 channel • AUX, 1 channel • Dual R-Trigger • Pre-settable ECG R delay time • Pre-settable ECG position • Adjustable ECG gain control • Pre-settable PCG position • Adjustable PCG gain control • Pre-settable AUX position • Adjustable AUX gain control
258	Automatic heart rate display	
259	Auto Ejection Fraction	
260	**Report writer (Option)**	
261	On-board reporting package automates report writing	
262	Formats various exam results into a report suitable for printing or reviewing on a standard PC	
263	Exam results include patient info, exam info, measurements, calculations, images, and comments Standard templates provided	
264	Customizable templates	
265	**Scanning Parameters**	
266	cSound™ Imageformer: Infinite number of effective channels	
267	Frame rate: 9,675 Hz maximum	
268	Displayed imaging depth: 0 – 100 cm	
269	Minimum depth of field: 0 – 2 cm (zoom) (probe dependent)	
270	Maximum depth of field: 0 – 100 cm (probe dependent)	
271	Continuous dynamic receive focus	
272	Continuous dynamic receive aperture	
273	Adjustable dynamic range, inifinite upper level	
274	Adjustable field of view (FOV)	
275	System Frequency Range: 0.7-24 MHz	
276	Image reverse: right/left	
277	Image rotation of 0°, 90°, 180°, 270°	
278	8 bits stored per color	
279	256 shades of gray	
280	256 color tones	
281	**Digital B-Mode**	
282	Adjustable	• Acoustic power • Gain • Dynamic range • Frame averaging • Gray scale map • Frequency • Speed of sound (application dependent) • Framerate • Scanning size (FOV or Angle) – Depending on the probe, see probe specifications • CrossXBeam • B colorization • Reject • Suppression • SRI
283	**Digital M-Mode**	
284	Adjustable	• Acoustic power • Gain • Dynamic range • Gray scale map • Frequency • Sweep speed • M colorization • M display format • Rejection
285	**Anatomical M-Mode**	
286	M-mode cursor adjustable at any plane	

287	Can be activated from a CINE loop from a live or stored image
288	M & A capability
289	Available with Color Flow Mode
290	**Digital Spectral Doppler Mode**
291	Adjustable	• Acoustic power • Gain • Dynamic range • Gray scale map • Transmit frequency • Wall filter • PW colorization • Velocity scale range • Sweep speed • Sample volume length • Angle correction • Steered linear • Spectrum inversion • Trace method • Baseline shift • Doppler auto trace • Time resolution • Compression • Trace direction • Trace sensitivity
292	**Digital Color Flow Mode**
293	Adjustable	• Acoustic power • Color maps, including velocity-variance maps • Gain • Velocity scale range • Wall filter • Packet size • Line density • Spatial filter • Steering angle • Baseline shift • Frame average • Threshold • Auto ROI placement and steering on linear • Accumulation mode • Flash suppression • Shortcuts
294	**Digital Power Doppler Imaging**
295	Adjustable	• Acoustic power • Color maps, velocity-variance maps • Gain including • Velocity scale range • Wall filter • Packet size • Line density • Spatial filter • Steering angle • Frame average • Threshold • Accumulation mode • Flash suppression • Shortcuts
296	**Continuous Wave Doppler (Option)**
297	Available on M5Sc-D, 6S-D, 6Tc-RS, P2D and P6D probes
298	Steerable CW mode included

299	Adjustable	• Acoustic power • Gain • Dynamic range • Gray scale map • Transmit frequency • Wall filter • CW colorization • Velocity scale range • Sweep speed • Angle correction • Spectrum inversion • Trace method • Baseline shift • Doppler auto trace • Compression • Trace direction • Trace sensitivity
300	**Automatic Optimization**	
301	Optimize B-Mode image to help improve contrast resolution with one button press	
302	Selectable amount of contrast resolution improvement (low, medium, high)	
303	CTO (Continuous Tissue Optimization) – continuously adjusts B-Mode axial and lateral gain uniformity and overall gain level suppressing the noise	
304	Auto-spectral optimize – adjusts baseline, invert, PRF (on live image), and angle correction with one button press	
305	Auto CF and PW positioning – adjusts ROI position, sample volume position and steering with one button press	
306	**Coded Harmonic Imaging**	
307	Available on all 2D and 4D probes	
308	**B-Flow (Option)**	
309	Available on the following probes: C1-6-D, C1-6VN-D, C2-7-D, C2-7VN-D, C2-9-D, C2-9VN-D, C3-10-D, L2-9-D, L2-9VN-D, L3-12-D, L6-24-D ML6-15-D, M5Sc-D, L8-18i-D	
310	Background	
311	Sensitivity/PRI	
312	Acoustic power	
313	Frequency	
314	Line density	
315	Frame average	
316	Gray scale map	
317	Tint map	
318	Dynamic range	
319	Rejection	
320	Gain	
321	Suppression	
322	SRI	
323	Accumulation	
324	Visualization	
325	**Radiant*flow*™**	
326	Easy, fast visualization of tiny vessels, displaying as a 3D effect	
327	Available in Color Doppler, Power Doppler and MVI	
328	**B Steer+ (Option)**	
329	Available on the following probes: L2-9-D, ML6-15-D, L8-18i-D, L3-12-D, L2-9VN-D	
330	**Coded contrast imaging (Option)**	
331	Available on the following probes: C1-6-D, C1-6VN-D, C2-9-D, C2-9VN-D, C2-7-D, C2-7VN-D, C3-10-D, IC5-9-D, L2-9-D, L2-9VN-D, L3-12-D, M5Sc-D, ML6-15-D, RAB6-D, RIC5-9-D, L6-24-D	
332	2 contrast timers	
333	Timed updates: 0.05 – 10 seconds	
334	Accumulation mode, seven levels	
335	Maximum enhance mode	
336	Flash	
337	Time intensity curve (TIC) analysis	
338	Parametric imaging	
339	Ability to save still image during clip acquisition	

340	The LOGIQ Fortis is designed for compatibility with most commercially available ultrasound 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 cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use.
341	**LOGIQView**
342	Extended field of view Imaging
343	Up to 160 cm (63") scan length
344	Available on all 2D imaging probes
345	For use in B-Mode
346	CrossXBeam is available on linear probes
347	Auto detection of scan direction
348	Pre-or post-process zoom
349	Rotation
350	Auto best fit on monitor
351	Measurements in B-Mode
352	**3D**
353	Allows unlimited rotation and planar translation
354	3D reconstruction from CINE sweep
355	Easy 3D available on all probes
356	**Advanced 3D**
357	Acquisition of color data
358	Automatic rendering
359	3D landscape technology
360	3D movie
361	**Real-time 4D (Option)**
362	Acquisition modes	• Real Time 4D • Spatio-Temporal Image Correlation (Option) • Static 3D

363	Visualization modes	• 3D rendering (diverse surface and intensity projection modes)
		• Sectional planes (3 section planes perpendicular to each other)
		• Omniview (Option)
		• Volume contrast imaging – Static (Option)
		• Volume contrast imaging – Omniview (Option)
		• Tomographic ultrasound imaging (Option)
		• Volume Analyses
		  – VOCAL: semi-auto/manual segmentation tool
		        (segmentation using touch screen) (Option)
		  – 3D Static only
		  – Threshold Volume: measure
		        volume below and above a threshold

364	Render mode	• Surface texture, surface smooth, max-, min-
		  and X-ray (average intensity projection),
		  mix mode of two render modes
		• HD*live* ™

365	SonoRender*live*
366	Curved 3 point Render start
367	3D Movie
368	Scalpel: 3D cut tool
369	Display format:	• Quad: A-/B-/C-Plane/3D • Dual: A-Plane/3D • Single: 3D or A- or B- or C-Plane
370	Automated Volume Calculation – VOCAL II
371	Betaview
372	**Volume navigation (Option)**
373	Available on the following probes: C1-6VN-D, C2-9VN-D, C2-7VN-D, C3-10-D, L2-9VN-D, ML6-15-D, IC5-9-D, L8-18i-D, M5Sc-D
374	Sensor-based acquisition
375	Position markers
376	Needle tip tracking
377	Virtual tracking
378	Auto image registration
379	Tru3D feature includes
380	Render modes: gray surface, texture, min-, max-, average-intensity

381	Measurements: distance, angle, area, volume
382	3D Movie
383	**Scan assistant (Option)**
384	Factory programs
385	User-defined programs
386	Steps include image annotations, mode transitions, basic imaging controls and measurement initiation
387	**Compare Assistant (Option)**
388	Allows side-by-side comparison of previous ultrasound and other modality exams during live scanning
389	**Breast productivity package**
390	Auto measurement
391	Worksheet summary includes measurements and locations for lesions and lymph nodes
392	Feature assessment
393	BI-RADS™ assessment
394	User editable
395	**Thyroid productivity package (Option)**
396	Auto measurement
397	Worksheet summary includes measurements and locations for nodule, parathyroid and lymph nodes
398	Feature assessment
399	BI-RADS™ assessment
400	User editable
401	**Start Assistant**
402	Automatically select category, probe, preset, or scan assistant from worklist exam description
403	Learn the category, probe, preset, and scan assistant based on exam description
404	**Shear Wave Elastography (Option)**
405	Available on the following probes: C1-6-D, C1-6VN-D, L2-9-D, L2-9VN-D, IC5-9-D, L8-18i-D, ML6-15-D, L3-12-D
406	User programmable measurement display in kPa and meters per second
407	Single and dual view display
408	Applications: Abdominal, Breast, Musculoskeletal, Small Parts, Prostate
409	**Strain elastography (Option)**
410	Available on the following probes: ML6-15-D, L2-9-D, L2-9VN-D, L3-12-D, IC5-9-D, C2-9-D, C2-9VN-D, C1-6-D, C1-6VN-D, L8-18i-D, BE9CS-D
411	Relative analysis tool
412	Applications: Abdominal, Breast, Musculoskeletal, Small Parts, Prostate, Thyroid
413	**UGAP (Option)**
414	Available on the following probes: C1-6-D, C1-6VN-D, C2-9-D, C2-9VN-D
415	Measures liver attenuation* (attenuation coefficient [dB/cm/MHz]) by auto measure algorithm with reference B-mode
416	Simple and 2D color map (attenuation color map and Measurement Position Indicator Map)
417	**Quantitative flow analysis (Option)**
418	Available in color and power Doppler
419	**TVI (Option)**
420	Available on the following probes: M5Sc-D, 6Tc-RS, 6S-D probes
421	Myocardial Doppler imaging with color overlay on tissue image
422	Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information
423	Curved anatomical M-Mode: free (curved) drawing of M-Mode generated from the cursor independent from the axial plane
424	Q-Analysis: multiple time-motion trace display from selected points in the myocardium
425	**Stress echo (Option)**
426	Advanced and flexible stress echo examination capabilities
427	Provides exercise and pharmacological protocol templates
428	6 default templates
429	Template editor for user configuration of existing templates or creation of new templates
430	Reference scan display during acquisition for stress level comparison (dual screen)
431	Baseline level/previous level selectable
432	Raw data continuous capture
433	Over 100 sec. available
434	Wall motion scoring (bulls-eye and segmental)
435	Smart stress: Automatically set up various scanning parameters (e.g. geometry, frequency, gain) according to same projection on previous level
436	**Auto EF (Option)**
437	Allows semi-automatic measurement of the global EF (Ejection Fraction)
438	User editable
439	**Cardiac AFI (Option)**
440	Allows assessment of the complete left ventricle with all segments at a glance by combining three longitudinal views into one comprehensive bulls-eye view
441	2D strain based data moves into clinical practice

442	**Virtual Convex**	
443	Provides a convex field of view	
444	Compatible with CrossXBeam	
445	Available on all linear and sector probes	
446	**SRI-HD and Advanced SRI**	
447	Speckle reduction imaging	
448	Provides multiple levels of speckle reduction	
449	Compatible with side-by-side DualView display	

450	Advanced SRI:
	two types selectable
		• Type 1
		  – Compatible with all linear, convex and sector probes
		• Type 2 (Option)
		  – Compatible with OB/GYN application

451	**CrossXBeam**	
452	Provides variable angle spatial compounding	
453	Live side-by-side DualView display	
454	Compatible with	• Color mode • PW • SRI • Coded harmonic imaging • Virtual convex
455	Available on all curved and linear probes	
456	**Controls available while "live"**	
457	Magnification Zoom: Magnifies the entire image on the screen without zoom ROI, 20x maximum zoom factor	
458	Pan Zoom: Magnifies the display of the data within the ROI	
459	HD Zoom: Magnifies the image within the zoom ROI, with higher spatial resolution than original images	
460	B/M/CrossXBeam-Mode	• Gain • TGC • Dynamic range • Acoustic output • Framerate control • Sweep speed for M-Mode • CrossXBeam angle
461	PW-Mode	• Gain • Dynamic range • Acoustic output • Transmission frequency • PRF • Wall filter • Spectral averaging • Sample volume gate: length, depth • Velocity scale
462	Color Flow-Mode	• CFM gain • CFM velocity range • Acoustic output • Wall echo filter • Packet size • Frame rate control • CFM spatial filter • CFM frame averaging • CFM line resolution • Frequency/velocity baseline shift
463	**Controls available on "freeze" or recall**	
464	Automatic optimization	
465	SRI	
466	CrossXBeam – display non-compounded and compounded image simultaneously in split screen	
467	3D reconstruction from a stored CINE loop	
468	B/M/CrossXBeam-Mode	• Gray map optimization • TGC • Colorized B and M • Frame average (loops only) • Dynamic range
469	Anatomical M-Mode	
470	Magnification zoom	
471	Pan zoom	
472	Maximum read zoom to 8x	

473	Baseline shift	
474	Sweep speed	
475	PW mode	• Gray map • Post gain • Baseline shift • Sweep speed • Invert spectral wave form • Compression • Rejection • Colorized spectrum • Display format • Doppler audio • Angle correct • Quick angle correct • Auto angle correct
476	Color flow	• Overall gain (loops and stills) • Color map • Transparency map • Frame averaging (loops only) • Flash suppression • CFM display threshold • Spectral invert for color/Doppler
477	Anatomical M-Mode on cine loop	
478	4D	• Gray map, colorize • Post gain • Change display – single, dual, quad sectional or rendered
479	**Measurements/Calculations**	
480	**General B-Mode**	
481	Depth and distance	
482	Circumference (ellipse/trace)	
483	Area (ellipse/trace)	
484	Volume (ellipsoid)	
485	% Stenosis (area or diameter)	
486	Angle between two lines	
487	Dual B-mode capability	
488	**General M-Mode**	
489	M-Depth	
490	Distance	
491	Time	
492	Slope	
493	Heart rate	
494	**General Doppler measurements/calculations**	
495	Velocity	
496	Time	
497	A/B ratio (velocities/frequency ratio)	
498	PS (Peak Systole)	
499	ED (End Diastole)	
500	PS/ED (PS/ED Ratio)	
501	ED/PS (ED/PS Ratio)	
502	AT (Acceleration Time)	
503	ACCEL (Acceleration)	
504	TAMAX (Time Averaged Maximum Velocity)	
505	Volume flow (TAMEAN and vessel area)	
506	Heart rate	
507	PI (Pulsatility Index)	
508	RI (Resistivity Index)	
509	**Real-time Doppler Auto Measurements/Calculations**	
510	PS (Peak Systole)	
511	ED (End Diastole)	
512	MD (Minimum Diastole)	
513	PI (Pulsatility Index)	
514	RI (Resistivity Index)	
515	AT (Acceleration Time)	

516	ACC (Acceleration)	
517	PS/ED (PS/ED Ratio)	
518	ED/PS (ED/PS Ratio)	
519	HR (Heart Rate)	
520	TAMAX (Time Averaged Maximum velocity)	
521	PVAL (Peak Velocity value)	
522	Volume flow (TAMEAN and vessel area)	
523	**Abdominal measurements/calculations**	
524	Shear Elasto velocity	
525	Shear Elasto stiffness	
526	Attenuation rate	
527	Attenuation coefficient	
528	Summary reports	
529	**Small Parts measurements/calculations**	
530	Breast Lesion	
531	Thyroid	
532	Parathyroid	
533	Lymph Node	
534	Nodule	
535	Isthmus AP	
536	Shear Elasto velocity	
537	Shear Elasto stiffness	
538	Summary reports	
539	**OB measurements/calculations**	
540	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) • 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) • OOD (Outer Orbital Diameter) • IOD (Inner Orbital Diameter) • FIB (Fibula length) • Radius (Radius length) • LV (Lateral Ventricle width) (= SL)
541	Estimated Fetal Weight (EFW) by:	• AC, BPD • AC, BPD, FL • AC, BPD, FL, HC • AC, FL • AC, FL, HC • AC, HC • BPD, APTD, TTD, FL • BPD, APTD, TTD, SL
542	Fetal graphical trending	
543	Growth percentiles	
544	Multi-gestational calculations (4)	
545	Fetal qualitative description (anatomical survey)	
546	Fetal environmental description (biophysical profile)	
547	Programmable OB tables	
548	Over 20 selectable OB calculations	
549	Expanded worksheets	
550	Summary Reports	

551	**OB Calculations and ratios**
552	FL/BPD
553	FL/AC
554	FL/HC
555	HC/AC
556	CI (Cephalic Index)
557	AFI (Amniotic Fluid Index)
558	CTAR (Cardio-Thoracic Area Ratio)
559	Measurements/calculations by: Alexander, ASUM, ASUM 2001, Bahlmann, Baschat, Berkowitz, Bertagnoli, Brenner, Campbell, CFEF, Chervenak, Chitty, Doubilet, Ebing, Eik-Nes Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Jeanty, JSUM, Kramer, Kurmanavicius, Kurtz, Mari, Mayden, Mercer, Merz, Moore, Nelson, Osaka University, Paris, Pexsters, Rempen, Robinson, Shepard, Shepard/Warsoff, Sonek, Tokyo University, Tokyo/Shinozuka, WHO, Williams, Yarkoni
560	**OB measure assistant**
561	Allows automatic measurement of BPD, HC, FL and AC
562	User editable
563	**SonoNT and SonoIT**
564	SonoNT measures the contour detection of the NT border
565	SonoIT is a system supported measurement for Intracranial Translucency
566	**GYN measurements/calculations**
567	Right ovary length, width, height
568	Left ovary length, width, height
569	Uterus length, width, height
570	Cervix length, trace
571	Ovarian volume
572	ENDO (Endometrial thickness)
573	Ovarian RI
574	Uterine RI
575	Follicular measurements
576	Fibroid measurements
577	Qualitative description (anatomical survey)
578	Mean Uterine Artery (Gomez) Doppler Measurement
579	Summary reports
580	**Vascular measurements/calculations**
581	SYS DCCA (Systolic Distal Common Carotid Artery)
582	DIAS DCCA (Diastolic Distal Common Carotid Artery)
583	SYS MCCA (Systolic Mid Common Carotid Artery)
584	DIAS MCCA (Diastolic Mid Common Carotid Artery)
585	SYS PCCA (Systolic Proximal Common Carotid Artery)
586	DIAS PCCA (Diastolic Proximal Common Carotid Artery)
587	SYS DICA (Systolic Distal Internal Carotid Artery)
588	DIAS DICA (Systolic Distal Internal Carotid Artery)
589	SYS MICA (Systolic Mid Internal Carotid Artery)
590	DIAS MICA (Diastolic Mid Internal Carotid Artery)
591	SYS PICA (Systolic Proximal Internal Carotid Artery)
592	DIAS PICA (Diastolic Proximal Internal Carotid Artery)
593	SYS DECA (Systolic Distal External Carotid Artery)
594	DIAS DECA (Diastolic Distal External Carotid Artery)
595	SYS PECA (Systolic Proximal External Carotid Artery)
596	DIAS PECA (Diastolic Proximal External Carotid Artery)
597	VERT (Systolic Vertebral Velocity)
598	SUBCLAV (Systolic Subclavian Velocity)
599	Auto IMT (Option)
600	Summary reports
601	**Urological measurements/calculations**
602	Bladder volume
603	Prostate volume
604	Left/right renal volume
605	Generic volume
606	Post-void bladder volume
607	Pelvic floor measurements
608	Summary reports
609	**TCD measurements/calculations**
610	MCA, ACA, PCA, ICA
611	AComA, PCom A
612	Vert

613	Basilar	
614	MCA/ICA Ratio	
615	Summary reports	
616	**Pediatric and Neonatal measurements/calculations**	
617	Hip angle	
618	Hip orientation	
619	Summary reports	
620	**Probes (All Optional)**	
621	**6S-D, sector probe**	
622	Applications	Pediatric cardiac, pediatric abdomen
623	Bandwidth	2.0 – 8.0 MHz
624	Number of elements	96
625	Field of view (max.)	115°
626	Physical foot print	15 x 9 mm
627	B-Mode frequency	4.0, 4.2, 5.0, 5.5, 6.5 MHz
628	Harmonic frequency	4.7, 4.9, 5.3, 5.7, 6.1, 6.3 MHz
629	PW Doppler frequency	2.8, 3.1, 3.6, 4.2 MHz
630	Color Doppler frequency	2.7, 3.1, 4.2, 5.0 MHz
631	**6Tc-RS, trans-esophageal probe**	
632	Applications	Adult cardiac
633	Bandwidth	2.0 – 8.0 MHz
634	Number of elements	64
635	Field of view (max.)	90°
636	Physical foot print	37 x 13 x 10 mm
637	B-Mode frequency	5.0, 6.0, 6.5 MHz
638	Harmonic frequency	6.0 MHz
639	PW Doppler frequency	3.1, 3.6, 4.2, 5.0, 6.3 MHz
640	Color Doppler frequency	3.3, 4.1, 4.7, 5.5 MHz
641	**BE9CS-D**	
642	Applications	Urology
643	Biopsy guide	Single angle, disposable (E8387M); Single angle, reusable (E8387MA)
644	Bandwidth	3.0 - 12.0 MHz
645	Number of elements	64
646	Field of view (max.)	133°
647	Physical foot print	19 x 19 mm
648	B-Mode frequency	6.0, 7.0, 8.0, 9.0 MHz
649	Harmonic frequency	7.0, 8.0, 9.0, 10.0 MHz
650	PW Doppler frequency	4.2, 5.0, 6.3 MHz
651	Color Doppler frequency	4.3, 6.3, 8.2 MHz
652	**C1-6-D, XDclear™ convex probe**	
653	Applications	Abdomen, OB/GYN, pediatric, peripheral vascular, general musculoskeletal
654	Biopsy guide	Multi-angle, disposable with a reusable bracket (H4917VB)
655	Bandwidth	1.0 – 6.0 MHz
656	Number of elements	192
657	Field of view (max.)	80°
658	Physical foot print	67 x 11 mm
659	B-Mode frequency	2.0, 2.5, 3.0, 4.0 MHz
660	Harmonic frequency	1.5, 2.5, 3.0, 4.5, 6.0, 6.5 MHz
661	PW Doppler frequency	1.7, 2.1, 2.5, 3.6 MHz
662	Color Doppler frequency	1.8, 2.1, 2.5, 2.8, 3.0 MHz
663	**C1-6VN-D, VNav inside XDclear convex probe**	
664	VNav sensor inside probe for Volume Navigation tracking without sensor cables	
665	Applications	Abdomen, OB/GYN, pediatric, peripheral vascular, general musculoskeletal
666	Biopsy guide	Multi-angle, disposable with a reusable bracket (H4917VB)
667	Bandwidth	1.0 – 6.0 MHz
668	Number of elements	192
669	Field of view (max.)	80°
670	Physical foot print	67 x 11 mm
671	B-Mode frequency	2.0, 2.5, 3.0, 4.0 MHz
672	Harmonic frequency	1.5, 2.5, 3.0, 4.5, 6.0, 6.5 MHz
673	PW Doppler frequency	1.7, 2.1, 2.5, 3.6 MHz
674	Color Doppler frequency	1.8, 2.1, 2.5, 2.8, 3.0 MHz

675	**C2-7-D, micro convex biopsy probe**	
676	Applications	Abdomen, pediatric
677	Biopsy guide	Multi-angle, disposable with a reusable bracket (H40482LK), Multi-Angle, reusable stainless bracket (H40482LL)
678	Bandwidth	1.0 – 6.0 MHz
679	Number of elements	144
680	Field of view (max.)	110°
681	Physical foot print	31 x 10 mm
682	B-Mode frequency	2.5, 4.0, 6.0 MHz
683	Harmonic frequency	3.0, 4.0, 5.0, 6.0 MHz
684	PW Doppler frequency	1.8, 2.1, 2.5, 3.1 MHz
685	Color Doppler frequency	2.1, 2.4, 3.1, 3.7 MHz
686	**C2-7-VN-D, VNav inside XDclear convex probe**	
687	VNav sensor inside probe for Volume Navigation tracking without sensor cables	
688	Applications	Abdomen, pediatric
689	Biopsy guide	Multi-angle, disposable with a reusable bracket (H40482LK), Multi-Angle, reusable stainless bracket (H40482LL)
690	Bandwidth	1.0 – 6.0 MHz
691	Number of elements	144
692	Field of view (max.)	110°
693	Physical foot print	31 x 10 mm
694	B-Mode frequency	2.5, 4.0, 6.0 MHz
695	Harmonic frequency	3.0, 4.0, 5.0, 6.0 MHz
696	PW Doppler frequency	1.8, 2.1, 2.5, 3.1 MHz
697	Color Doppler frequency	2.1, 2.4, 3.1, 3.7 MHz
698	**C2-9-D, XDclear convex probe**	
699	Applications	Abdomen, OB/GYN, pediatric, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal
700	Biopsy guide	Multi-angle, disposable with a reusable bracket (H4913BA)
701	Bandwidth	2.0 – 9.0 MHz
702	Number of elements	192
703	Field of view (max.)	80°
704	Physical foot print	52 x 9 mm
705	B-Mode frequency	3.0, 4.5, 6.0, 7.0 MHz
706	Harmonic frequency	2.5, 3.5, 5.0, 7.0, 9.0 MHz
707	PW Doppler frequency	2.5, 3.1, 3.6, 4.2, 5.0, 6.3 MHz
708	Color Doppler frequency	3.1, 4.2, 4.6, 5.4 MHz
709	**C2-9-VN-D, VNav inside XDclear convex probe**	
710	VNav sensor inside probe for Volume Navigation tracking without sensor cables	
711	Applications	Abdomen, OB/GYN, pediatric, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal
712	Biopsy guide	Multi-angle, disposable with a reusable bracket (H4913BA)
713	Bandwidth	2.0 – 9.0 MHz
714	Number of elements	192
715	Field of view (max.)	80°
716	Physical foot print	52 x 9 mm
717	B-Mode frequency	3.0, 4.5, 6.0, 7.0 MHz
718	Harmonic frequency	2.5, 3.5, 5.0, 7.0, 9.0 MHz
719	PW Doppler frequency	2.5, 3.1, 3.6, 4.2, 5.0, 6.3 MHz
720	Color Doppler frequency	3.1, 4.2, 4.6, 5.4 MHz
721	**C3-10-D, XDclear micro convex probe**	
722	Applications	Abdomen, neonatal, pediatric, peripheral vascular, neonatal transcranial, small part
723	Bandwidth	2.0 – 11.0 MHz
724	Number of elements	192
725	Field of view (max.)	95°
726	Physical foot print	26 x 5 mm
727	B-Mode frequency	4.0, 6.0, 8.0 MHz
728	Harmonic frequency	6.0, 8.0, 10.0 MHz
729	PW Doppler frequency	3.1, 4.2, 6.3, 7.1 MHz
730	Color Doppler frequency	3.9, 5.3, 6.6 MHz
731	**IC5-9-D, micro convex probe**	
732	Applications	OB/GYN, urology
733	Biopsy guide	Single angle, disposable with a disposable bracket (E8385MJ) or reusable bracket (H40412LN)

734	Bandwidth	3.0 – 10.0 MHz
735	Number of elements	192
736	Field of view (max.)	180°
737	Physical foot print	26 x 6 mm
738	B-Mode frequency	4.5, 5.0, 5.5, 6.0, 7.0, 8.0 MHz
739	Harmonic frequency	6.0, 6.5, 7.0, 9.0 MHz
740	PW Doppler frequency	3.6, 4.2, 5.0 MHz
741	Color Doppler frequency	4.6, 5.9, 6.7 MHz
742	**L2-9-D, XDclear linear probe**	
743	Applications	Peripheral vascular, pediatric, abdomen, OB/GYN, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial and small parts inculding breast, thyroid and scrotal
744	Biopsy guide	Multi-angle, disposable with a reusable bracket (H44901AM)
745	Bandwidth	2.0 – 10.0 MHz
746	Number of elements	192
747	Field of view (max.)	44 mm
748	Physical foot print	53 x 14 mm
749	B-Mode frequency	4.0, 4.5, 5.0, 6.0, 7.0 MHz
750	Harmonic frequency	5.0, 6.0, 7.0, 8.0, 9.0, 9.4 MHz
751	PW Doppler frequency	2.5, 2.8, 3.1, 3.6, 4.2, 5.0 MHz
752	Color Doppler frequency	3.1, 4.0, 4.6, 5.3 MHz
753	**L2-9VN-D, VNav inside XDclear linear probe**	
754	VNav sensor inside probe for Volume Navigation tracking without sensor cables	
755	Applications	Peripheral vascular, pediatric, abdomen, OB/GYN, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial and small parts inculding breast, thyroid and scrotal
756	Biopsy guide	Multi-angle, disposable with a reusable bracket (H44901AM)
757	Bandwidth	2.0 – 10.0 MHz
758	Number of elements	192
759	Field of view (max.)	44 mm
760	Physical foot print	53 x 14 mm
761	B-Mode frequency	4.0, 4.5, 5.0, 6.0, 7.0 MHz
762	Harmonic frequency	5.0, 6.0, 7.0, 8.0, 9.0, 9.4 MHz
763	PW Doppler frequency	2.5, 2.8, 3.1, 3.6, 4.2, 5.0 MHz
764	Color Doppler frequency	3.1, 4.0, 4.6, 5.3 MHz
765	**L3-12-D, linear probe**	
766	Applications	Abdomen, OB, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial, small parts, vascular
767	Biopsy guide	Multi-angle, disposable with a reusable bracket (H78652PA)
768	Bandwidth	3.0 – 11.0 MHz
769	Number of elements	256
770	Field of view (max.)	51 mm
771	Physical foot print	51 x 4 mm
772	B-Mode frequency	6.0, 8.0, 10.0, 12.0 MHz
773	Harmonic frequency	4.0, 6.0, 8.0, 10.0, 12.0 MHz
774	PW Doppler frequency	4.2, 5.0, 6.3, 8.3 MHz
775	Color Doppler frequency	4.3, 4.9, 5.4, 6.1, 7.2, 8.0 MHz
776	**L6-24-D, linear probe**	
777	Applications	General musculoskeletal, superficial musculoskeletal, pediatrics, thyroid
778	Bandwidth	6.0 – 20.0 MHz
779	Number of elements	192
780	Field of view (max.)	26 mm
781	Physical foot print	26 x 2 mm
782	B-Mode frequency	12.0, 16.0, 21.0 MHz
783	Harmonic frequency	12.0, 18.0, 24.0 MHz
784	PW Doppler frequency	8.3, 10.0, 12.5 MHz
785	Color Doppler frequency	9.2, 11.2, 12.2 MHz
786	**L8-18i-D, linear probe**	
787	Applications	Small parts, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal, superficial musculoskeletal, intraoperative
788	Bandwidth	4.0 – 15.0 MHz
789	Number of elements	168

790	Field of view (max.)	25 mm
791	Physical foot print	35 x 10 mm
792	B-Mode frequency	7.0, 9.0, 13.0, 16.0 MHz
793	Harmonic frequency	14.0, 16.0, 18.0 MHz
794	PW Doppler frequency	5.0, 6.3, 7.1, 8.3 MHz
795	Color Doppler frequency	6.3, 6.7, 9.6, 10.5 MHz
796	**M5Sc-D, XDclear sector probe**	
797	Applications	Adult cardiac, pediatric cardiac, adult cephalic, abdominal
798	Biopsy guide	Multi-angle, disposable with a reusable bracket (H45561FC)
799	Bandwidth	1.0 – 5.0 MHz
800	Number of elements	288
801	Field of view (max.)	120°
802	Physical foot print	28 x 17 mm
803	B-Mode frequency	2.0, 2.5, 3.5, 4.5 MHz
804	Harmonic frequency	2.4, 3.0, 3.2, 3.3, 3.7, 4.0, 4.5 MHz
805	PW Doppler frequency	1.6, 1.7, 1.8, 1.9, 2.1, 2.5, 3.1, 3.6 MHz
806	Color Doppler frequency	1.7, 1.8, 1.9, 2.2, 2.4, 2.5, 3.0, 3.1, 3.7, 3.8 MHz
807	**ML6-15-D, matrix array linear probe**	
808	Applications	Abdomen, peripheral vascular, neonatal, pediatric, neonatal transcranial, general musculoskeletal, superficial musculoskeletal and small parts inculding breast, thyroid and scrotal
809	Biopsy guide	Multi-angle, disposable with a reusable bracket (H40432LJ)
810	Bandwidth	4.0 – 16.0 MHz
811	Number of elements	1008
812	Field of view (max.)	50 mm
813	Physical foot print	50 x 10 mm
814	B-Mode frequency	7.0, 9.0, 10.0, 11.0, 12.0, 15.0 MHz
815	Harmonic frequency	10.0, 12.0, 14.0, 15.0 MHz
816	PW Doppler frequency	5.0, 6.3, 8.3 MHz
817	Color Doppler frequency	5.1, 6.1, 7.3, 8.2, 9.2, 10.3, 11.4, 12.4 MHz
818	**P2D, CW split crystal probe**	
819	Applications	Adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic
820	Frequency	2.1 MHz
821	**P6D, CW split crystal probe**	
822	Applications	Adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic
823	Frequency	6.3 MHz
824	**RAB6-D, convex volume probe**	
825	Applications	Abdomen, OB/GYN, pediatric, neonatal
826	Biopsy guide	Single angle, reusable bracket (H46701AE)
827	Bandwidth	2.0 – 8.0 MHz
828	Number of elements	192
829	Field of view (max.)	80°
830	Physical foot print	62 x 34 mm
831	B-Mode frequency	3.5, 5.0, 8.0 MHz
832	Harmonic frequency	4.0, 5.0, 6.5, 8.0 MHz
833	PW Doppler frequency	3.1, 4.2, 5.0 MHz
834	Color Doppler frequency	2.8, 3.5, 3.8 MHz
835	**RIC5-9-D, convex volume probe**	
836	Applications	OB/GYN, urology
837	Biopsy guide	Single angle, reusable (H46721R)
838	Bandwidth	3.0 – 10.0 MHz
839	Number of elements	192
840	Field of view (max.)	180°
841	Physical foot print	32 x 27 mm
842	B-Mode frequency	5.0, 5.5, 6.0, 6.5, 7.0, 8.0 MHz
843	Harmonic frequency	6.0, 6.5, 7.0, 9.0 MHz
844	PW Doppler frequency	3.6, 4.2, 5.0 MHz
845	Color Doppler frequency	4.3, 6.1, 7.3 MHz
846	**External Inputs and outputs (not including on-board peripherals)**	
847	HDMI	
848	Ethernet	
849	Multiple USB 3.0 ports	
850	**Safety Conformance**	

851	**The LOGIQ Fortis is:**
852	Classified to UL 60601-1 by a Nationally Recognized Test Lab
853	Certified to CAN/CSA-C22.2 No. 60601.1-M90 by an SCC accredited test lab
854	CE Marked to EU Medical Device Regulation MDR 2017/745
855	Compliant to Council Directive 2011/65/EU for RoHS
856	Conforms to the following standards for safety (including national deviations)	• EMC Emissions group 1 class A device requirements as per sub clause 4.2 of CISPR 11 • IEC 60601-1 Medical electrical equipment – Part 1: General requirements for safety • IEC 60601-1-2 Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic disturbance – Requirements and tests • IEC 60601-1-6 Medical electrical equipment Part 1-6 general requirements for basic safety and essential performance – Collateral standard: usability • IEC 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment • IEC 62366 Medical devices – Application of usability engineering to medical devices • IEC62366-1 Medical device software – Software life-cycle processes • ISO 10993-1 Biological evaluation of medical devices – Part 1: Evaluation and testing within a risk management process

857	**Supplement: cardiac measurements/calculations**
858	**B-Mode measurements**
859	Aorta	• Aortic Root Diameter (Ao Root Diam) • Aortic Arch Diameter (Ao Arch Diam) • Ascending Aortic diameter (Ao Asc) • Descending Aortic Diameter (Ao Desc Diam) • Aorta Isthmus (Ao Isthmus) • Aorta (Ao st junct)
860	Aortic valve	• Aortic Valve Cusp Separation (AV Cusp) • Aortic Valve Area Planimetry (AVA Planimetry) • (Trans AVA)
861	Left atrium	• Left Atrium Diameter (LA Diam) • LA Length (LA Major) • LA Width (LA Minor) • Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao ratio) • Left Atrium Area (LAA(d), LAA(s)) • Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C), (LAEDV A-L, LAEDV Index A-L, LAESV A-L, LAESV Index A-L)
862	Left ventricle	• Left Ventricle Mass (LVPWd, LVPWs) • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) Left Ventricle Length (LVLd, LVLs) • Left Ventricle Outflow Tract Diameter (LVOT Diam) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Length (LV Major) • Left Ventricle Width (LV Minor) • Left Ventricle Outflow Tract Area (LVOT) • Left Ventricle Area, Two Chamber/Four Chamber/Short Axis (LVA (d), LVA (s)) • Left Ventricle Endocardial Area, Width (LVA (d), LVA(s)) • Left Ventricle Epicardial Area, Length (LVAepi (d), LVAepi (s)) • Left Ventricle Mass Index (LVPWd, LVPWs) • Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs)
863	Left ventricle continued	• Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs) • Left Ventricle Stroke Index, Teichholz/Cube (LVIDd, LVIDs and Body Surface Area) • Left Ventricle Fractional Shortening (LVIDd, LVIDs) • Left Ventricle Stroke Volume, Teichholz/Cubic (LVIDd, LVIDs) • Left Ventricle Stroke Index, Single Plane, Two Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs) • Left Ventricle Stroke Index, Single Plane, Four Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs) • Left Ventricle Stroke Index, Bi-Plane, Bullet, Method of Disk (LVAd, LVAs) • Interventricular Septum (IVS) • Left Ventricle Internal Diameter (LVI D) • Left Ventricle Posterior Wall Thickness (LVPW)
864	Mitral valve	• Mitral Valve Annulus Diameter (MV Ann Diam) • E-Point-to-Septum Separation (EPSS) • Mitral Valve Area Planimetry (MVA Planimetry)
865	Pulmonic valve	• Pulmonic Valve Area (PV Planimetry) • Pulmonic Valve Annulus Diameter (PV Annulus Diam) • Pulmonic Diameter (Pulmonic Diam)
866	Right atrium	• Right Atrium Diameter, Length (RAD Ma) • Right Atrium Diameter, Width (RAD Mi) • Right Atrium Area (RAA) • Right Atrium Volume, Single Plane, Method of Disk (RAAd) • Right Atrium Volume, Systolic, Single Plane, Method of Disk (RAAs)

867	Right ventricle	• Right Ventricle Outflow Tract Area (RVOT Planimetry) • Left Pulmonary Artery Area (LPA Area) • Right Pulmonary Artery Area (RPA Area) • Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Diameter, Length (RVD Ma) • Right Ventricle Diameter, Width (RVD Mi) • Right Ventricle Wall Thickness (RVAWd, RVAWs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Left Pulmonary Artery (LPA) • Main Pulmonary Artery (MPA) • Right Pulmonary Artery (RPA)
868	System inferior vena cava	• Systemic Vein Diameter (Systemic Diam) • Patent Ductus Arterosis Diameter (PDA Diam) • Pericard Effusion (PEs) • Patent Foramen Ovale Diameter (PFO Diam) • Ventricular Septal Defect Diameter (VSD Diam) • Interventricular Septum (IVS) Fractional Shortening (IVSd, IVSs)
869	Tricuspid valve	• Tricuspid Valve Area (TV Panimetry) • Tricuspid Valve Annulus Diameter (TV Annulus Diam)
870	**M-Mode measurements**	
871	Aorta	• Aortic Root Diameter (Ao Root Diam) • Aortic Valve • Aortic Valve Diameter (AV Diam) • Aortic Valve Cusp separation (AV Cusp) • Aortic Valve Ejection Time (LVET)
872	Left atrium	• Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio) • Left Atrium Diameter (LA Diam)
873	Left ventricle	• Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Ejection Time (LVET) • Left Ventricle Pre-Ejection Period (LVPEP) • Interventricular Septum (IVS) • Left Ventricle Internal Diameter (LVI D) • Left Ventricle Posterior Wall Thickness (LVPW)
874	Mitral valve	• E-Point-to-Septum Separation (EPSS) • Mitral Valve Leaflet Separation (D-E Excursion) • Mitral Valve Anterior Leaflet Excursion (D-E Excursion) • Mitral valve D-E Slope (D-E Slope) • Mitral Valve E-F Slope (E-F Slope) • Mitral Annular Plane Systolic Excursion (MAPSE)
875	Pulmonic valve	• QRS Complex to End of Envelope (Q-PV close)
876	Right ventricle	• Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Wall Thickness (RVAWd, RVAWs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Right Ventricle Ejection Time (RVET) • Right Ventricle Pre-Ejection Period (RVPEP)
877	System	• Pericard Effusion (PE (d))
878	Tricuspid valve	• QRS Complex to End of Envelope (Q-TV close) • Tricuspid Annular Plane Systolic Excursion (TAPSE)

879	**Doppler Mode measurements**	
880	Aortic valve	• Aortic Insufficiency Mean Pressure Gradient (AR Trace) • Aortic Insufficiency Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency End Diastole Pressure Gradient (AR Trace) • Aortic Insufficiency Mean Velocity (AR Trace) • Aortic Insufficiency Velocity Time Integral (AR Trace) • Aortic Valve Mean Velocity (AV Trace) • Aortic Valve Velocity Time Integral (AV Trace) • Aortic Valve Mean Pressure Gradient (AV Trace) • Aortic Valve Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency Peak Velocity (AR Vmax) • Aortic Insufficiency End-Diastolic Velocity (AR Trace) • Aortic Valve Peak Velocity (AV Vmax) • Aortic Valve Peak Velocity at Point E (AV Vmax)
881	Aortic valve continued	• Aorta Proximal Coarctation (Coarc Pre-Duct) • Aorta Distal Coarctation (Coarc Post-Duct) • Aortic Valve Insufficiency Pressure Half Time (AR PHT) • Aortic Valve Flow Acceleration (AV Trace) • Aortic Valve Pressure Half Time (AV Trace) • Aortic Valve Acceleration Time (AV Acc Time) • Aortic Valve Deceleration Time (AV Dec Time) • Aortic Valve Ejection Time (AVET) • Aortic Valve Acceleration to Ejection Time Ratio (AV Acc Time, AVET) • Aortic Valve Area(VTI): AVA (Vmax)
882	Left ventricle	• Left Ventricle Outflow Tract Peak Pressure Gradient (LVOT Vmax) • Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax) • Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace) • Left Ventricle Outflow Tract Mean Velocity (LVOT Trace) • Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace) • Left Ventricle Ejection Time (LVET)
883	Mitral valve	• E' Early diastolic mitral valve annular velocity (E') • E' Avg Averaged early diastolic mitral valve annular velocity (E' Avg) • E' Lat Early diastolic mitral valve lateral annular velocity (E' Lat) • E' Medial Early diastolic mitral valve medial annular velocity (E' Medial) • E' Sept Early diastolic mitral • Mitral inflow E velocity to E' ratio (E/E') • Mitral inflow E velocity to E' Avg ratio (E/E' Avg) • Mitral inflow E velocity to E' Lat ratio (E/E' Lat) • Medial Mitral inflow E velocity to E' Medial ratio (E/E') • Mitral inflow E velocity to E' Sept ratio (E/E' Sept) • Mitral Valve Regurgitant Flow Acceleration (MR Trace) • Mitral Valve Regurgitant Mean Velocity (MR Trace)
884	Mitral valve continued	• Mitral Regurgitant Mean Pressure Gradient (MR Trace) • Mitral Regurgitant Velocity Time Integral (MR Trace) • Mitral Valve Mean Velocity (MV Trace) • Mitral Valve Velocity Time Integral (MV Trace) • Mitral Valve Mean Pressure Gradient (MV Trace) • Mitral Regurgitant Peak Pressure Gradient (MR Vmax) • Mitral Valve Peak Pressure Gradient (MV Vmax) • Mitral Regurgitant Peak Velocity (MR Vmax) • Mitral Valve Peak Velocity (MV Vmax) • Mitral Valve Velocity Peak A (MV A Velocity) • Mitral Valve Velocity Peak E (MV E Velocity)

885	Mitral valve continued	• Mitral Valve Area According to PHT (MV PHT) • Mitral Valve Flow Deceleration (MV DecT) • Mitral Valve Pressure Half Time (MV PHT) • Mitral Valve Flow Acceleration (MV AccT) • Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/ARatio) • Mitral Valve Acceleration Time • (MV Acc Time) • Mitral Valve Deceleration Time (MV Dec Time) • Mitral Valve Ejection Time ((MVET) • Mitral Valve A-Wave Duration (MV A Dur) • Mitral Valve Time to Peak (MV TTP) • Mitral Valve Acceleration Time/Deceleration Time Ratio (MVAcc/Dec Time) • Stroke Volume Index by Mitral Flow (MVA Planimetry, MVTrace)
886	Pulmonic Valve	• Pulmonic Insufficiency Peak Pressure Gradient (PR Vmax) • Pulmonic Insufficiency End-Diastolic Pressure Gradient (PRTrace) • Pulmonic Valve Peak Pressure Gradient (PV Vmax) • Pulmonic Insufficiency Peak Velocity (PR Vmax) • Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax) • Pulmonic Valve Peak Velocity (PV Vmax) • Pulmonary Artery Diastolic Pressure (PV Trace) • Pulmonic Insufficiency Mean Pressure Gradient (PR Trace)
887	Pulmonic valve continued	• Pulmonic Valve Mean Pressure Gradient (PV Trace) • Pulmonic Insufficiency Mean Square Root Velocity (PR Trace) • Pulmonic Insufficiency Velocity Time Integral (PR Trace) • Pulmonic Valve Mean Velocity (PV Trace) • Pulmonic Valve Velocity Time Integral (PV Trace) • Pulmonic Insufficiency Pressure Half Time (PR PHT) • Pulmonic Valve Flow Acceleration (PV Acc Time) • Pulmonic Valve Acceleration Time (PV Acc Time) • Pulmonic Valve Ejection Time (PVET) • QRS Complex to End of Envelope (Q-to-PV Close) • Pulmonic Valve Acceleration to Ejection TIme Ratio (PV Acc Time, PVET)

888	Right ventricle	• Right Ventricle Outflow Tract Peak Pressure Gradient
		  (RVOT Vmax)
		• Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax)
		• Right Ventricle Outflow Tract Velocity Time Integral (RVOTTrace)
		• Right Ventricle Ejection Time (RV Trace)
		• Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOTTrace)
		• Right Ventricle Stroke Volume Index by Pulmonic Flow
		  (RVOT Planimetry, RVOT Trace)

889	System	• Pulmonary Artery Peak Velocity (PV Vmax) • Pulmonary Vein Velocity Peak A (Reverse) (P Vein A) • Pulmonary Vein Peak Velocity (P Vein D, P Vein S) • Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic) • Ventricular Septal Defect Peak Velocity (VSD Vmax) • Atrial Septal Defect (ASD Diastolic, ASD Systolic) • Pulmonary Vein A-Wave Duration (P Vein A Dur) • IsoVolumetric Relaxation Time (IVRT) • IsoVolumetric Contraction Time (IVCT) • Pulmonary Vein S/D Ratio (P Vein D, P Vein S) • Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax) • Pulmonic-to-Systemic Flow Ratio (Qp/Qs)
890	Tricuspid valve	• Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax) • Tricuspid Valve Peak Pressure Gradient (TV Vmax) • Tricuspid Regurgitant Peak Velocity (TR Vmax) • Tricuspid Valve Peak Velocity (TV Vmax) • Tricuspid Valve Velocity Peak A (TV A Velocity) • Tricuspid Valve Velocity Peak E (TV E Velocity) • Tricuspid Regurgitant Mean Pressure Gradient (TR Trace) • Tricuspid Valve Mean Pressure Gradient (TV Trace)

891	Tricuspid valve continued	• Tricuspid Regurgitant Mean Velocity (TR Trace) • Tricuspid Regurgitant Velocity Time Integral (TR Trace) • Tricuspid Valve Mean Velocity (TV Trace) • Tricuspid Valve Velocity Time Integral (TV Trace) • Tricuspid Valve Time to Peak (TV TTP) • Tricuspid Valve Ejection Time (TV Acc/Dec Time) • Tricuspid Valve A-Wave Duration (TV A Dur) • QRS Complex to End of Envelope (Q-TV Close) • Tricuspid Valve Pressure Half Time (TV PHT) • Stroke Volume by Tricuspid Flow (TV Planimetry, TV Trace) • Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity)

892	Color Flow Mode measurements	

893	Aortic valve	• Proximal Isovelocity Surface Area:
		  Regurgitant Orifice Area (AR Radius)
		• Proximal Isovelocity Surface Area:
		  Radius of Aliased Point (AR Radius)
		• Proximal Isovelocity Surface Area:
		  Regurgitant Flow (AR Trace)
		• Proximal Isovelocity Surface Area:
		  Regurgitant Volume Flow (AR Trace)
		• Proximal Isovelocity Surface Area:
		  Aliased Velocity (AR Vmax)

894	Mitral valve	• Proximal Isovelocity Surface Area:
		  Regurgitant Orifice Area (MR Radius)
		• Proximal Isovelocity Surface Area:
		  Radius of Aliased Point (MR Radius)
		• Proximal Isovelocity Surface Area:
		  Regurgitant Flow (MR Trace)
		• Proximal Isovelocity Surface Area:
		  Regurgitant Volume Flow (MR Trace)
		• Proximal Isovelocity Surface Area:
		  Aliased Velocity (MR Vmax)

895	Combination Mode measurements	

896	Aortic valve	• Aortic Valve Area (Ao Root Diam, LVOT Vmax, AV Vmax)
		• Aortic Valve Area by Continuity Equation by Peak Velocity
		  (Ao Root Diam, LVOT Vmax, AV Vmax)
		• Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace)
		• Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR)
		• Aortic Valve Area by Continuity Equation VTI
		  (Ao Root Diam, LVOT Vmax, AV Trace)

897	Left ventricle	• Cardiac Output, Teichholz/Cubic (LVIDd, LVI Ds, HR)
		• Cardiac Output Two Chamber, Single Plane,
		  Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR)
		• Cardiac Output Four Chamber, Single Plane,
		  Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR)
		• Ejection Fraction Two Chamber, Single Plane,
		  Area-Length/Method of Disk (Simpson) (LVAd, LVAs)
		• Ejection Fraction Four Chamber, Single
		  Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs)
		• Left Ventricle Stroke Volume, Single Plane,
		  Two Chamber/Four Chamber, Area-Length (LVAd, LVAs)

898	Left ventricle continued	• Left Ventricle Stroke Volume, Single Plane,
		  Two Chamber/Four Chamber, Method of Disk (Simpson)
		  (LVIDd, LVIDs, LVAd, LVAs)
		• Left Ventricle Volume, Two Chamber/Four Chamber,
		  Area-Length (LVAd, LVAs)
		• Ejection Fraction, Bi-Plane,
		  Method of Disk (LVAd, LVAs, 2CH, 4CH)
		• Left Ventricle Stroke Volume, Bi-Plane,
		  Method of Disk (LVAd, LVAs, 2CH, 4CH)
		• Left Ventricle Volume, Bi-Plane,
		  Method of Disk (LVAd, LVAs, 2CH, 4CH)
		• Left Ventricle Stroke Index, Single Plane,
		  Two Chamber/Four Chamber, Area-Length (LVSd, LVSs and BSA)
		• Left Ventricle Volume, Single Plane,
		  Two Chamber/Four Chamber, Method of Disk (LVAd, LVAs)
		• Left Ventricle Volume, Apical View,
		  Long Axis, Method of Disk (LVAd, LVAs)

899	Mitral valve	• Stroke Volume by Mitral Flow (MVA Planimetry, MV Trace) • Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR)
900	Pulmonic valve	• Stroke Volume by Pulmonic Flow (PV Planimetry, PV Trace) • Cardiac Output by Pulmonic Flow (PV Planimetry, PV Trace, HR)
901	Tricuspid valve	• Cardiac Output by Tricuspid Flow (TV Planimetry, TV Trace, HR)
902	Combination Mode measurements	
903	Parameter: lists the mode, the measurement folder and the specific measurement	

904	Measured Value: Up to six measurement values for each item. Average, maximum, minimum or last
905	**Generic study in cardiology**
906	Stroke Volume (SV)
907	Cardiac Output (CO)

LOGIQ Fortis™

Data sheet

The LOGIQ Fortis is GE's premium ultrasound imaging system designed for general imaging applications including abdominal, vascular, obstetric, gynecologic, neonatal, pediatric, urological, transcranial, cardiac, and small parts applications.

gehealthcare.com

General specifications

Dimensions and weight
(Dimensions given with floating keyboard stowed and display tilted for transport)

Height	1250 – 1800 mm, 49 – 71"
Width	530 mm, 20.9" (Caster) 565 mm, 22.2" (Monitor)
Depth	885 mm, 34.8"
Weight	85 kg (187.4 lb)

Electrical power

Voltage 100 – 240 VAC

Frequency 50/60 Hz

Power consumption maximum of 0.9 KVA with peripherals

Console design

4 active probe ports

1 inactive probe storage port

Integrated SSD (1 TB)

Integrated DVD-R Multi Drive

On-board storage of thermal printer

Integrated speaker

Integrated locking mechanism that provides rolling lock and caster swivel lock

Integrated cable management

Front and rear handles

Easily removable air filters

User interface

Operator keyboard

Operating keyboard, adjustable in height and rotation

Ergonomic hard key layout

Interactive back-lighting

Integrated recording keys for remote control of up to 4 peripheral or DICOM® devices

Integrated gel warmer

Touch screen

12.1" High-resolution, color, touch display screen

Interactive dynamic software menu

Brightness adjustment

User-configurable layout

Display monitor

23.8" Widescreen high-resolution HDU Display

Display translation (independent of console)

350 mm (13.7") horizontal (both directions)

120 mm (4.7") vertical

90° swivel (both directions)

Fold-down and lock mechanism for transportation

Resolution: 1920 x 1080

Anti-glare

Viewing angle 89/89/89/89°

System overview

Applications

Abdominal

Obstetrical

Gynecological

Breast

Small Parts

Peripheral Vascular

Transcranial (adult and neonatal)

Pediatric and Neonatal

Musculoskeletal (general and superficial)

Urological

Cardiac (adult and pediatric)

Interventional

Pleural

System overview (cont.)

Operating modes

B-Mode

M-Mode

Color Flow Mode (CFM)

B-Flow™ (Option)

Extended Field of View (LOGIQ View)

Power Doppler Imaging (PDI)

PW Doppler

CW Doppler (Option)

Volume Modes (3D/4D) (Option)	• 3D Static • 4D Real Time

Anatomical M-Mode

Coded Contrast Imaging (Option)

Strain Elastography (Option)

B-Steer+ (Option)

Shearwave Elastography (Option)

UGAP (Option)

Scanning methods

Electronic sector

Electronic convex

Electronic linear

Mechanical volume sweep

Probe types

Sector phased array

Convex array

Micro convex array

Linear array

Matrix array

Volume probes (4D)

Split crystal

System standard features

Advanced user interface with high-resolution 12.1" display touch panel

Automatic optimization

CrossXBeam™

Speckle Reduction Imaging (SRI-HD, Advanced SRI Type 1)

Fine angle steer

Coded harmonic imaging

Virtual convex

Patient information database

Image archive on integrated CD/DVD and hard drive

Advanced 3D

Real-time automatic Doppler calculations

OB calculations

Fetal trending

Multigestational calculations

Hip dysplasia calculations

Gynecological calculations

Vascular calculations

Urological calculations

Renal calculations

Cardiac calculations

InSite™ capability

On-board electronic documentation

Auto CF/PW positioning feature

Privacy and security, including user and rights management

LOGIQView

Breast productivity package (Option)

Thyroid productivity package (Option)

External USB printer connection

Network printer support

HDMI output (available for compatible devices)

System overview *(cont.)*

Options

Tricefy®

DICOM

B-Flow

Auto IMT

Compare assistant

Scan assistant

OB measure assistant

Color quantification

Strain Elastography

Elastography quantification

Advanced privacy and security (vulnerability scan)

Power assistant and scan on battery

Storage bins

Shear wave elastography

Volume navigation

UGAP

Hepatic assistant

Coded Contrast Imaging

Stress echo

Cardiac Strain (Automatic Function Imaging)

On-board reporting

TVI

Wireless LAN

CW

DVR

Tablet tools

Advanced probes

KOIOS

SonoNT SonoIT

Advanced SRI Type 2

Peripheral options

Integrated options for	• Digital B&W thermal printer • DVD video recorder
Digital color thermal printer	
Digital A6 color thermal printer	
Foot switch with programmable functionality	
Console protective cover	
LOGIQ smart device apps	• Photo Assistant • Remote Control
CRF-200U card reader (for Japan)	

Display modes

Live and stored display format	• Full size and split screen – both w/ thumbnails. For still and CINE.
Review image format	• 4x4, and thumbnails. For still and CINE.
Timeline display	• Independent Dual B or CrossXBeam/ PW Display • CW • Top/bottom selectable display format • Side/side selectable format
Virtual convex	

Simultaneous capability

B or CrossXBeam/PW

B or CrossXBeam/CW (Option)

B or CrossXBeam/CFM or PDI

B/M

B/CrossXBeam

B-Flow/PW

Real-time Triplex Mode

B or CrossXBeam + CFM or PDI/PW

Selectable alternating modes

B or CrossXBeam/PW

B or CrossXBeam + CFM (PDI)/PW

B/CW (Option)

System overview (cont.)

Multi-image (split/quad screen)

Live and/or frozen

B or CrossXBeam + B or CrossXBeam/CFM or PDI

PW/M

Independent CINE playback

Display annotation

Patient name: first, last, and middle

Patient ID

Alternate patient ID

Age, sex, and date of birth

Hospital name

Date format: three types selectable	• MM/DD/YY • YY/MM/DD	• DD/MM/YY
Time format: two types selectable	• 24 hours	• 12 hours
Gestational age from	• LMP • EDD	• GA • BBT

Probe name

Map names

Probe orientation

Depth scale marker

Lateral scale marker

Image depth

Zoom depth

B-Mode	• Gain • Imaging frequency • Gray map	• Dynamic range • Frame averaging • SRI-HD
M-Mode	• Gain • Time scale	• Dynamic range
Doppler Mode	• Gain • Sample volume depth and width • Spectrum inversion • Time scale • Doppler frequency	• Angle • Wall filter • Velocity and/or frequency scale • PRF

Display annotation (cont.)

Color Flow Doppler Mode	• Line density • Frame averaging • Color Scale, 3 types: power, directional PDI, and symmetrical velocity imaging • Color velocity range and baseline • Color threshold marker • Color gain • PDI • Spectrum inversion • Doppler frequency

TGC curve

Acoustic frame rate

CINE gage, image number/frame number

Body pattern: multiple human and animal types

Application 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

% of maximum power output

Biopsy guideline and zone

Heart rate

General system parameters

System setup

Pre-programmed categories

User programmable preset capability

Factory default preset data

Languages: English, French, German, Spanish, Italian, Brazilian Portuguese, Russian, Greek, Swedish, Danish, Dutch, Finnish, Norwegian

OB report formats including Tokyo Univ., Osaka Univ., USA, Europe, ASUM, and WHO

User defined annotations

Body patterns

Customized comment home position

EZ Imaging: Simplified user interface for high volume workflow

General system parameters *(cont.)*

Complete user manual available on-board through Help (F1)

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

CINE memory/image memory

1 GB of CINE memory

Selectable CINE sequence for CINE review

Prospective CINE mark

Measurements/calculations and annotations on CINE playback

Scrolling timeline memory

Dual Image CINE display

Quad Image CINE display

CINE gauge and CINE image number display

CINE review loop

CINE review speed

Image storage

On-board database of patient information from past exams

Storage formats: DICOM	• Compressed/uncompressed • Single/multi-frame • Enhanced (3D/4D) • With/without raw data

Export JPEG, JPEG 2000, WMV (MPEG 4) formats

Storage devices	• USB memory stick: 64 MB to 64 GB (for exporting individual images/clips) • CD-R storage: 700 MB • DVD storage: -R (4.7 GB) • Hard drive image storage: ~730GB

Compare previous exam images with current exam

Reload of archived data sets

Connectivity

Ethernet network connection

Wireless LAN 802.11ac/a/b/g/n (Option)

DICOM 3.0	• Verify • Print • Store • Modality worklist • Storage commitment • Modality performed procedure step (MPPS) • Media exchange • Off network/mobile storage queue • Query/retrieve

Public SR template

Structured Reporting – compatible with vascular, OB, cardiac, and breast standard

InSite capability

Advanced privacy and security (Option)

Physiological input panel (Option)

Physiological input	• ECG, 1 channel • PCG, 1 channel • AUX, 1 channel • Dual R-Trigger • Pre-settable ECG R delay time • Pre-settable ECG position • Adjustable ECG gain control • Pre-settable PCG position • Adjustable PCG gain control • Pre-settable AUX position • Adjustable AUX gain control

Automatic heart rate display

Auto Ejection Fraction

Report writer (Option)

On-board reporting package automates report writing

Formats various exam results into a report suitable for printing or reviewing on a standard PC

Exam results include patient info, exam info, measurements, calculations, images, and comments with standard templates provided

Customizable templates

General system parameters *(cont.)*

Scanning parameters

Displayed imaging depth: 0 – 100 cm

Minimum depth of field: 0 – 2 cm (zoom) (probe dependent)

Maximum depth of field: 0 – 100 cm (probe dependent)

Continuous dynamic receive focus/continuous dynamic receive Aperture

Adjustable dynamic range	Adjustable field of view (FOV)

Image reverse: right/left

Image rotation of 0°, 90°, 180°, 270°

Digital B-Mode

Adjustable	• Acoustic power • Dynamic range • Gray scale map • Speed of sound (application dependent) • Scanning size (FOV or Angle) – Probe type dependent; consult individual probe specifications	• Gain • Frame averaging • Frequency • Frame rate • CrossXBeam • B colorization • Reject • Suppression • SRI-HD

Digital M-Mode

Adjustable	• Acoustic power • Dynamic range • Frequency • M colorization • Rejection	• Gain • Gray scale map • Sweep speed • M display format

Anatomical M-Mode

M-Mode cursor adjustable at any plane

Can be activated from a CINE loop from a live or stored image

M & A capability

Available with Color Flow Mode

Digital Spectral Doppler Mode

Adjustable	• Acoustic power • Dynamic range • Transmit frequency • PW colorization • Sweep speed • Sample volume length • Spectrum inversion • Baseline shift • Time resolution • Trace direction	• Gain • Gray scale map • Wall filter • Velocity scale range • Angle correction • Steered linear • Trace method • Doppler auto trace • Compression • Trace sensitivity

Digital Color Flow Mode

Adjustable	• Acoustic power • Gain • Velocity scale range • Wall filter • Packet size • Spatial filter • Frame average • Accumulation mode • Flash suppression • Shortcuts	• Color maps, including velocity-variance maps • Line density • Steering angle • Threshold • Auto ROI placement and steering on linear

Digital Power Doppler Imaging

Adjustable	• Acoustic power • Gain • Velocity scale range • Wall filter • Packet size • Spatial filter • Frame average • Accumulation mode • Shortcuts	• Color maps, including velocity-variance maps • Line density • Steering angle • Threshold • Flash suppression

Continuous Wave Doppler (Option)

Available on the following probes: M5Sc-D, P2D , P6D ,6S-D, 6Tc -RS

Steerable CW mode included

Adjustable	• Acoustic power • Dynamic range • Transmit frequency • CW colorization • Sweep speed • Angle correction • Trace method • Baseline shift • Compression • Trace direction	• Gain • Gray scale map • Wall filter • Velocity scale range • Spectrum inversion • Doppler auto trace • Trace sensitivity

Automatic optimization

Optimize B-Mode image to help improve contrast resolution

Selectable amount of contrast resolution improvement (low, medium, high)

CTO (Continuous Tissue Optimization) – continuously adjusts B-Mode axial and lateral gain uniformity and overall gain level, suppressing the noise

Auto-spectral optimize – adjusts baseline, invert, PRF (on live image), and angle correction

Auto CF and PW positioning – adjusts ROI position, sample volume position, and steering

General system parameters *(cont.)*

Coded Harmonic Imaging

Available on all 2D and 4D probes

B-Flow (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-7-D, C2-7VN-D, C2-9-D,C2-9VN-D, C3-10-D, L2-9-D, L2-9VN-D, L3-12-D, ML6-15-D,M5Sc-D, L8-18i-D, L6-24D

Background

Sensitivity/PRI

Acoustic power

Frequency

Line density

Frame average

Gray scale map

Tint map

Dynamic range

Rejection

Gain

Flash suppression

SRI-HD

Accumulation

Visualization

Radiant*flow*™

Easy, fast visualization of tiny vessels, displaying as a 3D effect

B Steer+

Available on the following probes: L2-9-D, L3-12-D, ML6-15-D, L8-18i-D, L2-9VN-D, L6-24

Coded contrast imaging (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-9-D, C2-9VN-D, C2-7-D, C2-7VN-D, C3-10-D, IC5-9-D, L2-9-D, L2-9VN-D, L3-12-D, M5Sc-D, ML6-15-D, RAB6-D, RIC5-9-D

2 contrast timers

Timed updates: 0.05 – 10 seconds

Accumulation mode, seven levels

Maximum enhance mode

Flash

Time intensity curve (TIC) analysis

Parametric imaging

The LOGIQ Fortis is designed for compatibility with most commercially available ultrasound 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 cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use.

LOGIQView

Extended field of view Imaging

Up to 160 cm (63") scan length

Available on all 2D imaging probes

For use in B-Mode

CrossXBeam is available on linear probes

Auto detection of scan direction

Pre-or post-process zoom

Rotation

Auto best fit on monitor

Measurements in B-Mode

3D

Allows unlimited rotation and planar translations

3D reconstruction from CINE sweep

Advanced 3D

Acquisition of color data

Automatic rendering

3D landscape technology

3D movie

General system parameters *(cont.)*

Real Time 4D (Option)

Acquisition modes	• Real Time 4D • Static 3D	• Spatio-Temporal Image Correlation
Visualization modes	• 3D rendering (diverse surface and intensity projection modes) • Sectional planes (3 section planes perpendicular to each other) • Omniview • Volume contrast imaging – static • Volume contrast imaging – Omniview • Tomographic ultrasound imaging • Volume Analyses – VOCAL: semi-auto/manual segmentation tool (segmentation using touch screen) – 3D static only – Threshold Volume: measure volume above and below a threshold	
Render mode	• Surface texture, surface smooth, max-min- and X-ray (average intensity projection), mix mode of two render modes • HD*live*™	

SonoRender*live*

Curved 3-point render start

3D movie

Scalpel: 3D cut tool

Display format	• Quad: A-/B-/C-Plane/3D • Dual: A-Plane/3D • Single: 3D or A- or B- or C-Plane

Automated volume calculation – VOCAL II

Betaview

Volume navigation (Option)

Available on the following probes: C1-6VN-D, C2-9VN-D, C2-7VN-D, C3-10-D, L2-9VN-D, ML6-15-D, IC5-9-D, L8-18i-D, M5Sc-D

Sensor-based acquisition

Position markers

Needle tip tracking

Virtual tracking

Auto image registration

Tru3D feature includes:	Display of data in: main-, parallel-, angular-mode

Render modes: gray surface, texture, min-, max-, average-intensity

Measurements: distance, angle, area, volume

3D movie

Scan assistant (Option)

Factory programs

User-defined programs

Steps include image annotations, mode transitions, basic imaging controls, and measurement initiation

Compare assistant (Option)

Allows side-by-side comparison of previous ultrasound and other modality exams during live scanning

Breast productivity package

Auto measurement

Worksheet summary includes measurements and locations for lesions and lymph nodes

Feature assessment

BI-RADS® assessment

User editable

Thyroid productivity package

Auto measurement

Worksheet summary includes measurements and locations for nodule, parathyroid, and lymph node

Feature assessment

TI-RADs assessment

User editable

Start Assistant

Automatically select category, probe, preset, or scan assistant from worklist exam description

Learn the category, probe, preset, and scan assistant based on exam description

Shear Wave Elastography (Option)

Available on the following probes: C1-6-D, C1-6VN-D, IC5-9-D, L2-9-D, L2-9VN-D,L3-12D, ML6-15-D, L8-18D

User programmable measurement display in kPa and meters per second

Single and dual view display

General system parameters *(cont.)*

Strain Elastography (Option)

Available on the following probes: ML6-15-D, L2-9-D, L2-9VN-D, L3-12-D, IC5-9-D, C2-9-D, C2-9VN-D, C1-6-D, C1-6VN-D, L8-18i-D, BE9CS-D

Relative analysis tool

UGAP (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-9D, C2-9VN-D

Measures liver attenuation* (attenuation coefficient [dB/cm/MHz]) by auto measure algorithm with reference B-mode

Simple and 2D color map (attenuation color map and Measurement Position Indicator Map)

Quantitative flow analysis (Option)

Available in color and power Doppler

TVI (Option)

Available on the following probes: M5Sc-D, 6S-D, 6TC-RS, 6Tc-RS

Myocardial Doppler imaging with color overlay on tissue image

Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information

Curved anatomical M-Mode: free (curved) drawing of M-Mode generated from the cursor independent of the axial plane

Q-Analysis: multiple time-motion trace display from selected points in the myocardium

Stress echo (Option)

Advanced and flexible stress echo examination capabilities

Provides exercise and pharmacological protocol templates

6 default templates

Template editor for user configuration of existing templates or creation of new templates

Reference scan display during acquisition for stress level comparison (dual screen)

Baseline level/previous level selectable

Raw data continuous capture

Over 100 sec. available

Wall motion scoring (bulls-eye and segmental)

Smart stress: Automatically set up various scanning parameters (e.g. geometry, frequency, gain) according to same projection on previous level

Auto EF (Option)

Allows semi-automatic measurement of the global EF (Ejection Fraction)

User editable

Cardiac AFI (Option)

Allows assessment of the complete left ventricle with all segments at a glance by combining three longitudinal views into one comprehensive bulls-eye view

2D strain-based data moves into clinical practice

Virtual convex

Provides a convex field of view

Compatible with CrossXBeam

Available on all linear and sector probes

SRI-HD and Advanced SRI

Speckle reduction imaging

Provides multiple levels of speckle reduction

Compatible with side-by-side DualView display

Advanced SRI: two types selectable	• Type 1 – Compatible with all linear, convex, and sector probes • Type 2 (Option) – Compatible with OB/GYN application

CrossXBeam

Provides variable angle spatial compounding

Live side-by-side DualView display

Compatible with	• Color mode • SRI-HD • Virtual convex	• PW • Coded harmonic imaging

Available on all curved and linear probes

Controls available while "live"

Magnification Zoom: Magnifies the entire image on the screen without zoom ROI

Pan Zoom: Magnifies the display of the data within the ROI

HD Zoom: Magnifies the image within the zoom ROI with higher spatial resolution than original images

B/M/CrossXBeam-Mode	• Gain • Dynamic range • Framerate control • CrossXBeam angle	• TGC • Acoustic output • Sweep speed for M-Mode

General system parameters *(cont.)*

Controls available while "live" *(cont.)*

PW-Mode	• Gain • Acoustic output • PRF • Wall filter • Sample volume gate: length, depth	• Dynamic range • Transmission frequency • Spectral averaging • Velocity scale
Color Flow Mode	• CFM gain • Acoustic output • Wall echo filter • Frame rate control • CFM frame averaging • Frequency/velocity baseline shift	• CFM velocity range • Packet size • CFM spatial filter • CFM line resolution

Controls available on "freeze" or recall

Automatic optimization

SRI-HD

CrossXBeam – display non-compounded and compounded image simultaneously in split screen

3D reconstruction from a stored CINE loop

B/M/CrossXBeam mode	• Gray map optimization • TGC • Colorized B and M • Frame average (loops only) • Dynamic range

Anatomical M-Mode

Magnification zoom

Pan zoom

Baseline shift

Sweep speed

PW mode	• Gray map • Baseline shift • Invert spectral wave form • Colorized spectrum • Quick angle correct	• Post gain • Sweep speed • Compression • Display format • Angle correct • Auto angle correct
Color flow	• Overall gain (loops and stills) • Color map • Transparency map • Frame averaging (loops only) • CFM display threshold • Spectral invert for color/Doppler	

Anatomical M-Mode on CINE loop

4D	• Gray map, colorize • Post gain • Change display – single, dual, quad sectional or rendered

Measurements/calculations

General B-Mode

Depth and distance

Circumference (ellipse/trace)

Area (ellipse/trace)

Volume (ellipsoid)

% Stenosis (area or diameter)

Angle between two lines

Dual B-Mode capability

General M-Mode

M-Depth

Distance

Time

Slope

Heart rate

General Doppler measurements/calculations

Velocity

Time

A/B ratio (velocities/frequency ratio)

PS (Peak Systole)

ED (End Diastole)

PS/ED (PS/ED Ratio)

ED/PS (ED/PS Ratio)

AT (Acceleration Time)

ACCEL (Acceleration)

TAMAX (Time Averaged Maximum Velocity)

Volume flow (TAMEAN and vessel area)

Heart rate

PI (Pulsatility Index)

RI (Resistivity Index)

Real-time Doppler auto measurements/calculations

PS (Peak Systole)

ED (End Diastole)

MD (Minimum Diastole)

PI (Pulsatility Index)

RI (Resistivity Index)

Measurements/calculations *(cont.)*

Real-time Doppler auto measurements/calculations *(cont.)*

AT (Acceleration Time)

ACC (Acceleration)

PS/ED (PS/ED Ratio)

ED/PS (ED/PS Ratio)

HR (Heart Rate)

TAMAX (Time Averaged Maximum Velocity)

PVAL (Peak Velocity Value)

Volume Flow (TAMEAN and Vessel Area)

Abdominal measurements/calculations

Shear Elasto velocity

Shear Elasto stiffness

Attenuation rate

Attenuation coefficient

Summary reports

Small Parts measurements/calculations

Breast Lesion

Thyroid

Parathyroid

Lymph Node

Nodule

Isthmus AP

Shear Elasto velocity

Shear Elasto stiffness

Summary reports

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) • 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) • OOD (Outer Orbital Diameter) • IOD (Inner Orbital Diameter) • FIB (Fibula length) • Radius (Radius length) • LV (Lateral Ventricle width) (= SL)

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

Estimated fetal weight (EFW) by:

AC, BPD

AC, BPD, FL

AC, BPD, FL, HC

AC, FL

AC, FL, HC

AC, HC

BPD, APTD, TTD, FL

BPD, APTD, TTD, SL

Measurements/calculations *(cont.)*

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: Alexander, ASUM, ASUM 2001, Bahlmann, Baschat, Berkowitz, Bertagnoli, Brenner, Campbell, CFEF, Chervenak, Chitty, Doubilet, Ebing, Eik-Nes Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Jeanty, JSUM, Kramer, Kurmanavicius, Kurtz, Mari, Mayden, Mercer, Merz, Moore, Nelson, Osaka University, Paris, Pexsters, Rempen, Robinson, Shepard, Shepard/Warsoff, Sonek, Tokyo University, Tokyo/Shinozuka, WHO, Williams, Yarkoni

OB measure assistant

Allows automatic measurement of BPD, HC, FL, AC, and HL

User editable

SonoNT and SonoIT

SonoNT measures the contour detection of the NT border

SonoIT is a system supported measurement for Intracranial Translucency

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

Fibroid measurements

Summary reports

Mean Uterine Artery (Gomez) Doppler Measurement and graph

Qualitative description (anatomical survey)

Vascular measurements/calculations

SYS DCCA (Systolic Distal Common Carotid Artery)

DIAS DCCA (Diastolic Distal Common Carotid Artery)

SYS MCCA (Systolic Mid Common Carotid Artery)

DIAS MCCA (Diastolic Mid Common Carotid Artery)

SYS PCCA (Systolic Proximal Common Carotid Artery)

DIAS PCCA (Diastolic Proximal Common Carotid Artery)

SYS DICA (Systolic Distal Internal Carotid Artery)

DIAS DICA (Diastolic Distal Internal Carotid Artery)

SYS MICA (Systolic Mid Internal Carotid Artery)

DIAS MICA (Diastolic Mid Internal Carotid Artery)

SYS PICA (Systolic Proximal Internal Carotid Artery)

DIAS PICA (Diastolic Proximal Internal Carotid Artery)

SYS DECA (Systolic Distal External Carotid Artery)

DIAS DECA (Diastolic Distal External Carotid Artery)

SYS PECA (Systolic Proximal External Carotid Artery)

DIAS PECA (Diastolic Proximal External Carotid Artery)

VERT (Systolic Vertebral Velocity)

SUBCLAV (Systolic Subclavian Velocity)

Automatic IMT

Summary reports

Urological calculations

Bladder volume

Prostate volume

Left/right renal volume

Generic volume

Post-void bladder volume

Pelvic floor measurements

Probes *(All Optional)*

BE9CS-D

Applications: urology

Biopsy guide: single angle, disposable (E8387M); single angle, reusable (E8387MA)

6S-D, sector probe

Applications: cardiac, pediatric cardiac

6Tc-RS, trans-esophageal probe

Applications: cardiac

TEE RS-DLP Adapter (H46352LK)

C1-6-D, XDclear™ convex probe

Applications: abdomen, OB/GYN, pediatric, peripheral vascular, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H4917VB)

C1-6VN-D, VNav inside XDclear convex probe

VNav sensor inside probe for Volume Navigation tracking without sensor cables

Applications: abdomen, OB/GYN, pediatric, peripheral vascular, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H4917VB)

C2-7-D, micro convex biopsy probe

Applications: abdomen, pediatric

Biopsy guide: multi-angle, disposable with a reusable bracket (H40482LK); multi-angle, with a reusable stainless bracket (H40482LL)

C2-7VN-D, VNav inside micro convex biopsy probe

VNav sensor inside probe for Volume Navigation tracking without sensor cables

Applications: abdomen, pediatric

Biopsy guide: multi-angle, disposable with a reusable bracket (H40482LK); multi-angle, with a reusable stainless bracket (H40482LL)

C2-9-D, XDclear convex probe

Applications: abdomen, OB/GYN, pediatric, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H4913BA)

C2-9VN-D, VNav inside XDclear convex probe

VNav sensor inside probe for Volume Navigation tracking without sensor cables

Applications: abdomen, OB/GYN, pediatric, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H4913BA)

C3-10-D, XDclear micro convex probe

Applications: abdomen, neonatal, pediatric, peripheral vascular, neonatal transcranial, small parts

IC5-9-D, micro convex probe

Applications: OB/GYN, urology

Biopsy guide: single angle, disposable with a disposable bracket (E8385MJ) or a reusable bracket (H40412LN)

L2-9-D, XDclear linear probe

Applications: peripheral vascular, small parts, pediatric, abdomen, OB/GYN, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial

Biopsy guide: multi-angle, disposable with a reusable bracket (H44901AM)

L2-9VN-D, VNav inside XDclear linear probe

VNav sensor inside probe for Volume Navigation tracking without sensor cables

Applications: peripheral vascular, small parts, pediatric, abdomen, OB/GYN, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial

Biopsy guide: multi-angle, disposable with a reusable bracket (H44901AM)

L3-12-D, linear probe

Applications: abdomen, OB, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial, small parts, vascular

Biopsy guide: multi-angle, disposable with a reusable bracket (H78652PA)

L6-24-D, linear probe

Applications: general musculoskeletal, superficial musculoskeletal, pediatrics, thyroid

Probes *(cont.)*

L8-18i-D, linear probe

Applications: small parts, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal, superficial musculoskeletal, intraoperative

M5Sc-D, XDclear sector probe

Applications: adult cardiac, pediatric cardiac, adult cephalic, abdominal

Biopsy guide: multi-angle, disposable with a reusable bracket (H45561FC)

ML6-15-D, matrix array linear probe

Applications: abdomen, small parts, peripheral vascular, neonatal, pediatric, neonatal transcranial, general musculoskeletal, superficial musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H40432LJ)

P2D, CW split crystal probe

Applications: adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic

P6D, CW split crystal probe

Applications: adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic

RAB6-D, convex volume probe

Applications: abdomen, OB/GYN, pediatric, neonatal

Biopsy guide: single angle, reusable bracket (H46701AE)

RIC5-9-D, convex volume probe

Applications: OB/GYN, urology

Biopsy guide: single angle, reusable (H46721R)

External Inputs and outputs
(not including on-board peripherals)

HDMI

Ethernet

Multiple USB 3.0 ports

Safety conformance

The LOGIQ Fortis is:

Classified to ANSI/AAMI ES60601-1 2005 R1 2012 Medical Electrical Equipment, Part 1: General Requirements for Safety by a Nationally Recognized Test Lab

Certified to CSA CAN/CSA-C22.2 NO. 60601-1:14 General requirements for safety

CE Marked to EU Medical Device Regulation MDR 2017-745 and Council Directive 93/42/EEC on Medical Devices and conforms to the following standards for safety:

- IEC/EN 60601-1 Edition 3.1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
- IEC/EN 60601-1-2 Medial electrical equipment – Parts 1-2: General requirements for safety – Collateral standard: Electromagnetic compatibility – requirements and tests
- IEC/EN 60601-1-6 Medical electrical equipment Parts 1 -6: General requirements for basic safety and essential performance – Collateral standard: usability
- IEC/EN 60601-2-37 Medical electrical equipment – Parts 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
- IEC 61157 (Standard means for the reporting of the acoustic output of medical diagnostic ultrasonic equipment)
- IEC/EN 62366 Application of usability engineering to medical devices
- IEC/EN 62304 Software life cycle processes
- IEC/EN 62359 Ultrasonic – Field characterization – Test methods for the determination of thermal and mechanical indices related to medical diagnostic ultrasonic fields
- EN ISO 15223-1: Symbols to be used with medical device labels, labelling, and information to be supplied
- ISO 10993-1 Biological evaluation of medical devices – Part 1: Evaluation and testing
- ISO14971:2012 (Medical devices – Application of risk management to medical devices)
- EMC Emissions Group 1, Class A device requirements as per sub-clause 4.2 of CISPR 11
- WEEE (Waste Electrical and Electronic Equipment)
- ROHS according to 2011/65/EU including national deviations
- Wireless equipment shall be certified to FCC, RED, and Japan Radio Law.
- Medical Device Good Manufacturing Practice Manual issued by the FDA (Food and Drug Administration, Department of Health, USA)

Supplement: cardiac measurements/calculations

B-Mode measurements	
Aorta	• Aortic Root Diameter (Ao Root Diam) • Aortic Arch Diameter (Ao Arch Diam) • Ascending Aortic Diameter (Ao Asc Diam) • Descending Aortic Diameter (Ao Desc Diam) • Aorta Isthmus (Ao Isthmus) • Aorta (Ao st junct)
Aortic valve	• Aortic Valve Cusp Separation (AV Cusp) • Aortic Valve Area Planimetry (AVA Planimetry) • Trans AVA
Left atrium	• Left Atrium Diameter (LA Diam) • LA Length (LA Major) • LA Width (LA Minor) • Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao ratio) • Left Atrium Area (LAA(d), LAA(s)) • Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C), (LAEDV A-L, LAEDV Index A-L, LAESV A-L, LAESV Index A-L)

B-Mode measurements *(cont.)*	
Left ventricle	• Left Ventricle Mass (LVPWd, LVPWs) • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) Left Ventricle Length (LVLd, LVLs) • Left Ventricle Outflow Tract Diameter (LVOT Diam) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Length (LV Major) • Left Ventricle Width (LV Minor) • Left Ventricle Outflow Tract Area (LVOT) • Left Ventricle Area, Two Chamber/Four Chamber/Short Axis (LVA (d), LVA (s)) • Left Ventricle Endocardial Area, Width (LVA (d), LVA(s)) • Left Ventricle Epicardial Area, Length (LVAepi (d), LVAepi (s)) • Left Ventricle Mass Index (LVPWd, LVPWs) • Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs) • Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs) • Left Ventricle Stroke Index, Teichholz/Cube (LVIDd, LVIDs and Body Surface Area) • Left Ventricle Fractional Shortening (LVIDd, LVIDs) • Left Ventricle Stroke Volume, Teichholz/Cubic (LVIDd, LVIDs) • Left Ventricle Stroke Index, Single Plane, Two Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs) • Left Ventricle Stroke Index, Single Plane, Four Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs) • Left Ventricle Stroke Index, Bi-Plane, Bullet, Method of Disk (LVAd, LVAs) • Interventricular Septum (IVS) • Left Ventricle Internal Diameter (LVI D) • Left Ventricle Posterior Wall Thickness (LVPW)

Supplement: cardiac measurements/calculations *(cont.)*

B-Mode measurements *(cont.)*	
Mitral valve	• Mitral Valve Annulus Diameter (MV Ann Diam) • E-Point-to-Septum Separation (EPSS) • Mitral Valve Area Planimetry (MVA Planimetry)
Pulmonic valve	• Pulmonic Valve Area (PV Planimetry) • Pulmonic Valve Annulus Diameter (PV Annulus Diam) • Pulmonic Diameter (Pulmonic Diam)
Right atrium	• Right Atrium Diameter, Length (RAD Ma) • Right Atrium Diameter, Width (RAD Mi) • Right Atrium Area (RAA) • Right Atrium Volume, Single Plane, Method of Disk (RAAd) • Right Atrium Volume, Systolic, Single Plane, Method of Disk (RAAs)
Right ventricle	• Right Ventricle Outflow Tract Area (RVOT Planimetry) • Left Pulmonary Artery Area (LPA Area) • Right Pulmonary Artery Area (RPA Area) • Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Diameter, Length (RVD Ma) • Right Ventricle Diameter, Width (RVD Mi) • Right Ventricle Wall Thickness (RVAWd, RVAWs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Left Pulmonary Artery (LPA) • Main Pulmonary Artery (MPA) • Right Pulmonary Artery (RPA)
System inferior vena cava	• Systemic Vein Diameter (Systemic Diam) • Patent Ductus Arterosis Diameter (PDA Diam) • Pericard Effusion (PEs) • Patent Foramen Ovale Diameter (PFO Diam) • Ventricular Septal Defect Diameter (VSD Diam) • Interventricular Septum (IVS) Fractional Shortening (IVSd, IVSs)
Tricuspid valve	• Tricuspid Valve Area (TV Panimetry) • Tricuspid Valve Annulus Diameter (TV Annulus Diam)

M-Mode measurements	
Aorta	• Aortic Root Diameter (Ao Root Diam) • Aortic Valve • Aortic Valve Diameter (AV Diam) • Aortic Valve Cusp separation (AV Cusp) • Aortic Valve Ejection Time (LVET)
Left atrium	• Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio) • Left Atrium Diameter (LA Diam)
Left ventricle	• Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Ejection Time (LVET) • Left Ventricle Pre-Ejection Period (LVPEP) • Interventricular Septum (IVS) • Left Ventricle Internal Diameter (LVI D) • Left Ventricle Posterior Wall Thickness (LVPW)
Mitral valve	• E-Point-to-Septum Separation (EPSS) • Mitral Valve Leaflet Separation (D-E Excursion) • Mitral Valve Anterior Leaflet Excursion (D-E Excursion) • Mitral Valve D-E Slope (D-E Slope) • Mitral Valve E-F Slope (E-F Slope) • Mitral Annular Plane Systolic Excursion (MAPSE)
Pulmonic valve	• QRS Complex to End of Envelope (Q-PV close)
Right ventricle	• Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Wall Thickness (RVAWd, RVAWs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Right Ventricle Ejection Time (RVET) • Right Ventricle Pre-Ejection Period (RVPEP)
System	• Pericard Effusion (PE (d))
Tricuspid valve	• QRS Complex to End of Envelope (Q-TV close) • Tricuspid Annular Plane Systolic Excursion (TAPSE)

Supplement: cardiac measurements/calculations *(cont.)*

Doppler Mode measurements	
Aortic valve	• Aortic Insufficiency Mean Pressure Gradient (AR Trace) • Aortic Insufficiency Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency End Diastole Pressure Gradient (AR Trace) • Aortic Insufficiency Mean Velocity (AR Trace) • Aortic Insufficiency Velocity Time Integral (AR Trace) • Aortic Valve Mean Velocity (AV Trace) • Aortic Valve Velocity Time Integral (AV Trace) • Aortic Valve Mean Pressure Gradient (AV Trace) • Aortic Valve Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency Peak Velocity (AR Vmax) • Aortic Insufficiency End-Diastolic Velocity (AR Trace) • Aortic Valve Peak Velocity (AV Vmax) • Aortic Valve Peak Velocity at Point E (AV Vmax) • Aorta Proximal Coarctation (Coarc Pre-Duct) • Aorta Distal Coarctation (Coarc Post-Duct) • Aortic Valve Insufficiency Pressure Half Time (AR PHT) • Aortic Valve Flow Acceleration (AV Trace) • Aortic Valve Pressure Half Time (AV Trace) • Aortic Valve Acceleration Time (AV Acc Time) • Aortic Valve Deceleration Time (AV Dec Time) • Aortic Valve Ejection Time (AVET) • Aortic Valve Acceleration to Ejection Time Ratio (AV Acc Time, AVET) • Aortic Valve Area(VTI): AVA (Vmax)
Left ventricle	• Left Ventricle Outflow Tract Peak Pressure Gradient (LVOT Vmax) • Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax) • Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace) • Left Ventricle Outflow Tract Mean Velocity (LVOT Trace) • Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace) • Left Ventricle Ejection Time (LVET)
Mitral valve	• E' Early diastolic mitral valve annular velocity (E') • E' Averaged Early diastolic mitral valve annular velocity (E' Avg) • E' Lat Early diastolic mitral valve lateral annular velocity (E' Lat) • E' Medial Early diastolic mitral valve medial annular velocity (E' Medial) • E' Sept Early diastolic mitral valve septal annular velocity (E'Sept)

Doppler Mode measurements *(cont.)*	
Mitral valve *(cont.)*	• Mitral inflow E velocity to E' ratio (E/E') • Mitral inflow E velocity to E' Avg ratio (E/E' Avg) • Mitral inflow E velocity to E' Lat ratio (E/E' Lat) • Medial Mitral inflow E velocity to E' Medial ratio (E/E') • Mitral inflow E velocity to E' Sept ratio (E/E' Sept) • Mitral Valve Regurgitant Flow Acceleration (MR Trace) • Mitral Valve Regurgitant Mean Velocity (MR Trace) • Mitral Regurgitant Mean Pressure Gradient (MR Trace) • Mitral Regurgitant Velocity Time Integral (MR Trace) • Mitral Valve Mean Velocity (MV Trace) • Mitral Valve Velocity Time Integral (MV Trace) • Mitral Valve Mean Pressure Gradient (MV Trace) • Mitral Regurgitant Peak Pressure Gradient (MR Vmax) • Mitral Valve Peak Pressure Gradient (MV Vmax) • Mitral Regurgitant Peak Velocity (MR Vmax) • Mitral Valve Peak Velocity (MV Vmax) • Mitral Valve Velocity Peak A (MV A Velocity) • Mitral Valve Velocity Peak E (MV E Velocity) • Mitral Valve Area According to PHT (MV PHT) • Mitral Valve Flow Deceleration (MV DecT) • Mitral Valve Pressure Half Time (MV PHT) • Mitral Valve Flow Acceleration (MV AccT) • Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/ARatio) • Mitral Valve Acceleration Time (MV Acc Time) • Mitral Valve Deceleration Time (MV Dec Time) • Mitral Valve Ejection Time ((MVET) • Mitral Valve A-Wave Duration (MV A Dur) • Mitral Valve Time to Peak (MV TTP) • Mitral Valve Acceleration Time/Deceleration Time Ratio (MV Acc/Dec Time) • Stroke Volume Index by Mitral Flow (MVA Planimetry, MVTrace)
Pulmonic valve	• Pulmonic Insufficiency Peak Pressure Gradient (PR Vmax) • Pulmonic Insufficiency End-Diastolic Pressure Gradient (PR Trace) • Pulmonic Valve Peak Pressure Gradient (PV Vmax) • Pulmonic Insufficiency Peak Velocity (PR Vmax)

Supplement: cardiac measurements/calculations *(cont.)*

Doppler Mode measurements *(cont.)*	
Pulmonic valve *(cont.)*	• Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax) • Pulmonic Valve Peak Velocity (PV Vmax) • Pulmonary Artery Diastolic Pressure (PV Trace) • Pulmonic Insufficiency Mean Pressure Gradient (PR Trace) • Pulmonic Valve Mean Pressure Gradient (PV Trace) • Pulmonic Insufficiency Mean Square Root Velocity (PR Trace) • Pulmonic Insufficiency Velocity Time Integral (PR Trace) • Pulmonic Valve Mean Velocity (PV Trace) • Pulmonic Valve Velocity Time Integral (PV Trace) • Pulmonic Insufficiency Pressure Half Time (PR PHT) • Pulmonic Valve Flow Acceleration (PV Acc Time) • Pulmonic Valve Acceleration Time (PV Acc Time) • Pulmonic Valve Ejection Time (PVET) • QRS Complex to End of Envelope (Q-to-PV Close) • Pulmonic Valve Acceleration to Ejection TIme Ratio (PV Acc Time, PVET)
Right ventricle	• Right Ventricle Outflow Tract Peak Pressure Gradient (RVOT Vmax) • Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax) • Right Ventricle Outflow Tract Velocity Time Integral (RVOT Trace) • Right Ventricle Ejection Time (RV Trace) • Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOT Trace) • Right Ventricle Stroke Volume Index by Pulmonic Flow (RVOT Planimetry, RVOT Trace)
System	• Pulmonary Artery Peak Velocity (PV Vmax) • Pulmonary Vein Velocity Peak A (Reverse) (P Vein A) • Pulmonary Vein Peak Velocity (P Vein D, P Vein S) • Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic) • Ventricular Septal Defect Peak Velocity (VSD Vmax) • Atrial Septal Defect (ASD Diastolic, ASD Systolic) • Pulmonary Vein A-Wave Duration (P Vein A Dur) • IsoVolumetric Relaxation Time (IVRT) • IsoVolumetric Contraction Time (IVCT)

Doppler Mode measurements *(cont.)*	
System *(cont.)*	• Pulmonary Vein S/D Ratio (P Vein D, P Vein S) • Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax) • Pulmonic-to-Systemic Flow Ratio (Qp/Qs)
Tricuspid valve	• Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax) • Tricuspid Valve Peak Pressure Gradient (TV Vmax) • Tricuspid Regurgitant Peak Velocity (TR Vmax) • Tricuspid Valve Peak Velocity (TV Vmax) • Tricuspid Valve Velocity Peak A (TV A Velocity) • Tricuspid Valve Velocity Peak E (TV E Velocity) • Tricuspid Regurgitant Mean Pressure Gradient (TR Trace) • Tricuspid Valve Mean Pressure Gradient (TV Trace) • Tricuspid Regurgitant Mean Velocity (TR Trace) • Tricuspid Regurgitant Velocity Time Integral (TR Trace) • Tricuspid Valve Mean Velocity (TV Trace) • Tricuspid Valve Velocity Time Integral (TV Trace) • Tricuspid Valve Time to Peak (TV TTP) • Tricuspid Valve Ejection Time (TV Acc/Dec Time) • Tricuspid Valve A-Wave Duration (TV A Dur) • QRS Complex to End of Envelope (Q-TV Close) • Tricuspid Valve Pressure Half Time (TV PHT) • Stroke Volume by Tricuspid Flow (TV Planimetry, TV Trace) • Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity)

Color Flow Mode measurements	
Aortic valve	• Proximal Isovelocity Surface Area: Regurgitant Orifice Area (AR Radius) • Proximal Isovelocity Surface Area: Radius of Aliased Point (AR Radius) • Proximal Isovelocity Surface Area: Regurgitant Flow (AR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (AR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (AR Vmax)

Supplement: cardiac measurements/calculations *(cont.)*

Color Flow Mode measurements *(cont.)*

Mitral valve	• Proximal Isovelocity Surface Area: Regurgitant Orifice Area (MR Radius) • Proximal Isovelocity Surface Area: Radius of Aliased Point (MR Radius) • Proximal Isovelocity Surface Area: Regurgitant Flow (MR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (MR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (MR Vmax)

Combination Mode measurements

Aortic valve	• Aortic Valve Area (Ao Root Diam, LVOT Vmax, AV Vmax) • Aortic Valve Area by Continuity Equation by Peak Velocity (Ao Root Diam, LVOT Vmax, AV Vmax) • Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace) • Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR) • Aortic Valve Area by Continuity Equation VTI (Ao Root Diam, LVOT Vmax, AV Trace)
Left ventricle	• Cardiac Output, Teichholz/Cubic (LVIDd, LVI Ds, HR) • Cardiac Output Two-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR) • Cardiac Output Four-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR) • Ejection Fraction Two-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs) • Ejection Fraction Four-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs) • Left Ventricle Stroke Volume, Single Plane, Two-Chamber/Four-Chamber, Area-Length (LVAd, LVAs) • Left Ventricle Stroke Volume, Single Plane, Two-Chamber/Four-Chamber, Method of Disk (Simpson) (LVIDd, LVIDs, LVAd, LVAs) • Left Ventricle Volume, Two-Chamber/Four-Chamber, Area-Length (LVAd, LVAs)

Combination Mode measurements *(cont.)*

Left ventricle *(cont.)*	• Ejection Fraction, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Stroke Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Stroke Index, Single Plane, Two-Chamber/Four-Chamber, Area-Length (LVSd, LVSs and BSA) • Left Ventricle Volume, Single Plane, Two-Chamber/Four-Chamber, Method of Disk (LVAd, LVAs) • Left Ventricle Volume, Apical View, Long Axis, Method of Disk (LVAd, LVAs)
Mitral valve	• Stroke Volume by Mitral Flow (MVA Planimetry, MV Trace) • Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR)
Pulmonic valve	• Stroke Volume by Pulmonic Flow (PV Planimetry, PV Trace) • Cardiac Output by Pulmonic Flow (PV Planimetry, PV Trace, HR)
Tricuspid valve	• Cardiac Output by Tricuspid Flow (TV Planimetry, TV Trace, HR)

Cardiac worksheet

Parameter: lists the mode, the measurement folder, and the specific measurement

Measured Value: Up to six measurement values for each item. Average, maximum, minimum, or last

Generic study in cardiology

Stroke Volume (SV)

Cardiac Output (CO)

LOGIQ Fortis™

Probe Guide

Featuring XDclear™ Technology

The LOGIQ Fortis is GE's premium ultrasound imaging system designed for abdominal, vascular, obstetric, gynecologic, neonatal, pediatric, urological, transcranial, cardiac, and small parts applications.

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	Description	Applications	FOV	Bandwidth	Biopsy Guide	Volume Navigation
CONVEX						
C1-6-D C1-6VN-D*	XDclear broad-spectrum convex probe	Abdominal, Obstetrics, Gynecology, Vascular, Musculoskeletal	80°	1 – 6 MHz	Multi-angle disposable with a reusable bracket	Yes * Internal VNav sensor, does not require an external bracket
C2-9-D C2-9VN-D*	XDclear broad-spectrum convex probe	Abdominal, Obstetrics, Gynecology, Pediatrics, Vascular, Musculoskeletal	80°	2 – 9 MHz	Multi-angle disposable with a reusable bracket	Yes * Internal VNav sensor, does not require an external bracket
C3-10-D	XDclear broad-spectrum convex probe	Neonatal, Pediatrics, Vascular, Small Parts	95°	2 – 11 MHz	No	Yes
IC5-9-D	Broad-spectrum micro-convex intra-cavitary probe	Obstetrics, Gynecology, Urology	180°	3 – 10 MHz	Single-angle disposable or single-angle reusable	Yes
C2-7-D C2-7VN-D*	Broad spectrum convex probe	Abdominal	110°	1 – 6 MHz	Multi-angle disposable with reusable bracket options	Yes * Internal VNav sensor, does not require an external bracket
LINEAR						
L2-9-D L2-9-VN-D*	XDclear broad-spectrum linear probe	Vascular, Small Parts, Musculoskeletal, Neonatal Cephalic, Pediatric, Abdominal, Obstetrical	44 mm	2 – 10 MHz	Multi-angle disposable with a reusable bracket	Yes * Internal VNav sensor, does not require an external bracket
L3-12-D	Broad-spectrum linear probe	Abdominal, Obstetric, Vascular, Musculoskeletal, Small Parts, Pediatric, Neonatal	51 mm	2 – 11 MHz	Multi-angle disposable with a disposable bracket	Yes
L6-24-D	Broad-spectrum linear probe	Musculoskeletal	26 mm	6 – 20 MHz	No	No
L8-18i-D	Broad-spectrum linear probe	Small Parts, Vascular, Intraoperative, Neonatal	25 mm	4 – 15 MHz	No	Yes
ML6-15-D	Broad-spectrum linear matrix array probe	Vascular, Small Parts, Neonatal, Pediatrics	50 mm	4 – 16 MHz	Multi-angle disposable with a reusable bracket	Yes

Description	Applications	FOV	Bandwidth	Biopsy Guide	Volume Navigation
SECTOR					
XDclear broad-spectrum sector probe	Cardiac, Transcranial, Abdominal	120º	1 – 5 MHz	Multi-angle disposable with a reusable bracket	Yes
Broad-spectrum sector probe	Cardiac	115º	2 – 8 MHz	No	No
REAL-TIME 4D					
Broad-spectrum real-time 4D probe	Abdominal, Obstetrics, Gynecology, Pediatrics	80º	2 – 8 MHz	Single-angle disposable with a reusable bracket	No
Broad-spectrum real-time 4D micro-convex probe	Obstetrics, Gynecology, Urology	180º	3 – 10 MHz	Single-angle reusable	No
SPECIALTY					
CW split crystal pencil probe	Cardiac, Vascular	N/A	1 – 3 MHz	No	No
CW split crystal pencil probe	Cardiac, Vascular, Transcranial	N/A	5 – 7 MHz	No	No
TEE probe	Cardiac	90º	2 – 8 MHz	No	No
Wideband bi-plane micro-convex probe	Urology, Endocavity	133º	3 – 12 MHz	Single-angle disposable bracket or reusable bracket	No

M5Sc-D

6S-D

RAB6-D

RIC5-9-D

P2D

P6D

6Tc-RS

BE9CS-D

For probe care and cleaning information, visit www.gehealthcare.com/transducers.