### OFFICE USE ONLY APPLICATION FOR OSHPD SPECIAL SEISMIC **CERTIFICATION PREAPPROVAL (OSP)** APPLICATION #: OSP - 0423 - 10 **OSHPD Special Seismic Certification Preapproval (OSP) Manufacturer Information GE Healthcare** Manufacturer: Manufacturer's Technical Representative: Tom Farnow Mailing Address: 3000 N. Grandview Blvd., Waukesha, WI 53188-1696 Telephone: 888-406-1101 Email: Tom.Farnow@gehcseismic.com **Product Information** Product Name: Revolution Discovery CT System; Revolution Frontier CT System Computed Tomography (CT) system Product Type: Product Model Number: See Attachment 1 (List all unique product identification numbers and/or part numbers) General Description: System components of multiple-component medical diagnostic imaging systems. Special Seismic Certification is limited to components of the Revolution Discovery CT System identified in Attachment 1. Rigid Floor Mount Mounting Description: **Applicant Information** Applicant Company Name: EASE Co. Contact Person: Jonathan Roberson, S.E. Mailing Address: 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709 Telephone: (909) 606-7622 Email: j.roberson@easeco.com I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016. Signature of Applicant: Date: January 16, 2019 Title: Principal Structural Engineer Company Name: EASE Co.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)
Company Name: EASE Co.
Name: Jonathan Roberson, S.E. California License Number: S4197
Mailing Address: 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709
Telephone: (909) 606-7622 Email: j.roberson@easeco.com
Supports and Attachments Preapproval
Supports and attachments are preapproved under OPM- (Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
Supports and attachments are not preapproved CODR
Certification Method
<ul> <li>✓ Testing in accordance with:</li> <li>✓ Other (Please Specify):</li> </ul> OSP=0423=10
BY: Timothy J. Piland
Testing Laboratory  DATE: 07/12/2019
Company Name: Environmental Testing Laboratory, Inc.
Contact Name: Brady Richard
Mailing Address: 11034 Indian Trail, Dallas, TX. 75229-3513
Telephone: (972) 247-9657 Email: <u>brady@etldallas.com</u>





# OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters
Design in accordance with ASCE 7-10 Chapter 13: ⊠ Yes ☐ No
Design Basis of Equipment or Components (F <sub>p</sub> /W <sub>p</sub> ) = See Attachment 1
S <sub>DS</sub> (Design spectral response acceleration at short period, g) = See Attachment 1
a <sub>p</sub> (In-structure equipment or component amplification factor) = See Attachment 1
R <sub>p</sub> (Equipment or component response modification factor) = See Attachment 1
$Ω_0$ (System overstrength factor) = 1½ (Gantry & Tables) / 2½ (All others)
I <sub>p</sub> (Importance factor) = 1.5
z/h (Height factor ratio) = See Attachment 1
Equipment or Component Natural Frequencies (Hz) = See Attachment 2
Overall dimensions and weight (or range thereof) = See Attachment 1
Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15:   Yes  No
Design Basis of Equipment or Components (V/W) =
S <sub>DS</sub> (Design spectral response acceleration at short period, g) =
S <sub>D1</sub> (Design spectral respons <mark>e acceleration at 1 second period, g) =</mark>
R (Response modification coefficient) = OSP-0423-10
$\Omega_0$ (System overstrength factor) =
C <sub>d</sub> (Deflection amplification factor) = BY: Timothy J. Piland
I <sub>p</sub> (Importance factor) = 1.5
Height to Center of Gravity above base =
Equipment or Component Natural Frequencies (Hz) =
Overall dimensions and weight (or range thereof) =
Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No
List of Attachments Supporting Special Seismic Certification
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022
1./ 1 00
Signature: Date: July 12, 2019
Print Name: Timothy J. Piland Title: SSE
Special Seismic Certification Valid Up to: S <sub>DS</sub> (g) = See Above z/h = See Above
Condition of Approval (if applicable):

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





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#### ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

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#### TABLE 1:

Manufacturer GE HEALT System REVOLUTION	HCARE ON DISCOVERY	CT SYSTE	M										
COMPONENT	MODEL NUMBER		OX. DIMENSIO	NS (IN.)	MAX. WT.	MOUNT	BASIS [1]	F <sub>P</sub> /W <sub>P</sub>	S <sub>DS</sub>	z/h	a <sub>P</sub>	R <sub>P</sub>	$\Omega_0$
GANTRIES	/		_		()				- 550				0
Revolution Discovery CT (CT HDe4) Gantry	5232083-100	89.3	40.5	75.6	4095	Floor	UUT 12144101-1	2.40 1.13	2.0 2.5	1 0	1	1 ½	1 ½
PATIENT TABLES				20	IR COI	$E \sim$							
GT1700V	5122080-11	25.6	93.3	19.2 / 41.2	1059 <sup>[2]</sup>	Floor	UUT 12112601-2						
GT1700 N9 ED3	5122080-4	25.6	93.3	19.2 / 41.2	1059	Floor	INT	0.40	2.0		1	1 1/2	l
GT2000X	5380966	25.6	114.5	18.3 / 41.3	1288	Floor	INT	2.40 1.13	2.0 2.5	1 0			1 ½
GT2000 N9	5121647-3	25.6	114.5	19.2 / 41.3	SP <sup>1146</sup> 423	3 – <b>Flo</b> or	12140801-4						
GT2000 N9 ED3 Assy	5121647-4	25.6	114,5	18.3 / 41.3	1146	Floor	SAME						
CONSOLES			I W	BV.T	imothy. T	Dilar							
Console Assembly – GOC6.6	5212920-150	48.74	46.54 / 54.74	26.7 / 34.7	405	Floor	UUT 12131201-1	1.50 1.13	2.0 2.5	1.0 0.0	2 ½	6	2
NIO HD64 Console	5212920-186	18.5	29	25.8 T E	: 076312/	2 (Filoor	UUT 12180501-3	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
NIO HD64 Console	5212920-185	18.5	29	25.8	163	Floor	SAME	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
POWER DISTRIBUTION	(PDU)			00			۵.,						
PDU (NGPDU-61)	2326492-61	27.6	21.7	41.8	818	Floor	UUT 12131301-2	1.44 1.13	2.0 2.5	1 0	1	2 ½	2
	se): free-standing, bas		ndition with the co	emponent rigidly	attached to a sur	porting structu	ure and no lateral s	upport above	the base. Re	equires the us	se of brackets	s/mounting as	ssemblies
• SAM • INT line. 2. 1700V F 3. GT 2000	#: Indicates that a test IE: Model is physically, (Interpolated or Extraporation Table weight do Deatient Table weight of Deatient Table weight of Deatier Table	mechanically olated): indicates not include does not include	& electrically the ses a model that we the 350 lb. simulate the 550 lb.	same as test spe as not specifical ated patient load alated patient loa	cimen. Differenc ly tested, and by present during to ad present during	e is limited to r which seismic esting.	model number, colo					r models in th	ne product



#### ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

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#### TABLE 2:

	MODEL	ODEL APPROX. DIMENSIONS (IN.)		NS (IN.)	MAX. WT.								
COMPONENT NUMBER	NUMBER	W	D	Н	(LB.)	MOUNT	BASIS [1]	F <sub>P</sub> /W <sub>P</sub>	S <sub>DS</sub>	z/h	a <sub>P</sub>	R <sub>P</sub>	$\Omega_0$
GANTRIES													
Revolution Frontier Gantry (HDe6)	5232085-203	88.7	41.6	74.8	4061	Rigid Base	UUT 12180501-1	2.40 1.13	2.0 2.5	1 0	1	1 ½	1 ½
Revolution Frontier Gantry (HDe6)	5232085-202	88.7	41.6	74.8 F	P 4061	Rigid Base	SAME	2.40 1.13	2.0 2.5	1 0	1	1 ½	1 ½
PATIENT TABLES				0,0			70						
GT1700V	5122080-11	25.6	93.3	19.2 / 41.2	1059 <sup>[2]</sup>	Floor	UUT 12112601-2					1 ½	
GT1700 N9 ED3	5122080-4	25.6	93.3	19.2 / 41.2	1059	Floor	INT [3]	2.40	2.0	1	1		1 ½
GT2000X	5380966	25.6	114.5	18.3 / 41.3	SP 1288 2	Floor	INT [3]	1.13	2.5	0			
GT2000 N9 ED3 Assy	5121647-4	25.6	114.5	18.3 / 41.3	1146	Floor	SAME [3]						
CONSOLES				BY:T	imothy J	. Pilan	d						
Console Assembly (HDe6)	5940904-10	15.7	26.4	22.7	138	Rigid Base	UUT 12180501-2	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
Console Assembly (HDe6)	5940904	15.7	26.4	22.7 TE	: 07/138	Rigid Base	SAME	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
Console Assembly	5940904-12	15.7	26.4	22.7	142.2	Rigid Base	UUŢ 1218181-1	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
Console Assembly	5940904-20	15.7	26.4	22.7	142.2	Rigid Base	SAME	1.44 1.13	2.0 2.5	1.0 0.0	1	2 ½	2
POWER DISTRIBUTION (	PDU)			A	Dr	-70							
PDU (NGPDU-61)	2326492-61	27.6	21.7	41.8	818 D	Floor	UUT 12131301-2	1.44 1.13	2.0 2.5	1 0	1	2 ½	2 ½
	e): free-standing, bas esting unless otherwise		dition with the c	omponent rigidly	attached to a su	pporting structu	re and no lateral s	upport above	the base. Re	equires the use	e of bracket	s/mounting a	ssemblies
Notes	IS:  : Indicates that a test:  : Model is physically, nterpolated or Extrapo atient Table weight doe	specimen matc mechanically & olated): indicate es not include t	electrically the ss a model that when the state of the st	same as test spe was not specifical ated patient load	cimen. Differend ly tested, and by	ce is limited to my which seismic	nodel number, colo					ır models in t	he product



### ATTACHMENT 2: TEST SPECIMEN SUMMARY

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Revolution Discovery CT Gantry (CT HDe4	l)
GE Healthcare	
Model No.: 5232083-100	
Serial No.: STOENG037G	
System component of Revolution Discovery CT System	
Floor mounted using (4) - 5/8" dia GR 8 bolts through leveling feet.	
	GE Healthcare  Model No.: 5232083-100  Serial No.: STOENG037G  System component of Revolution Discovery CT System  Floor mounted using (4) - 5/8" dia GR 8 bolts through



PROPERTIES:								
	DIMENSIONS (in.)				LOWE	EST RESONA	NT FREQUE	NCY (Hz.)
Width	Depth	Height	FOR !	Weight (lb.)	Front-Axis	Side	-Axis	Vert-Axis
89.3	40.5	75.6	T IIII	4095	OM 5.0	7	.1	15.7
SHAKE TABLE TI	EST PARAMETERS	12,1	100	HDD				
CODE	TEST CRITERIA	Sos	z/h		A <sub>FLX-H</sub>	$A_{RIG-H}$	A <sub>FLX-V</sub>	$A_{RIG-V}$
CBC 2016	ICC-ES AC156-15	2.0 2.5	08P-	0423.510	3.2	2.4	1.68	0.68
Unit maintained st	ructural integrity and fu	inctionality afte	r the ICC-ES	S AC 156 test	MANAKKAYAY			

	BY LIMOLIV J. PI
UUT 12112601-2	GT1700V Table
MANUFACTURER:	GE Hangwei Medical Systems CO., LTD. 07/12/2010
IDENTIFICATION:	Model No.: 5122080-11
DESCRIPTION:	System component of the Optima CT660 System Test specimen included a simulated patient load of 350 lb.  BUILDING
MOUNTING:	Rigid Base (Floor) mounted using (4) – 5/8" dia. hex head bolts to interface plate.



PROPERTIES:											
DIMENSIONS (in.)						LOV	VEST RESON	IANT FREQU	IENCY (Hz.)		
Width	Depth	Height		Weight		Weight (lb.)		Transverse-A	xis Longit	udinal-Axis	Vertical-Axis
25.6	93.3	19.2 / 41.2		1059+	- 350 Patient	3.9		15.2	14.2		
SHAKE TABLE T	EST PARAMETERS										
CODE	TEST CRITERIA	$S_{DS}$	z/h	ì	$I_P$	$A_{FLX-H}$	$A_{RIG-H}$	A <sub>FLX-V</sub>	$A_{RIG-V}$		
CBC 2016	ICC-ES AC156-15	2.0 2.6	1.0 0.0		1.5	3.2	2.40	1.74	0.70		
Unit maintained st	ructural integrity and fu	nctionality afte	er the IC	C-ES A	AC 156 test						



07/12/2019

### **GE HEALTHCARE**

#### ATTACHMENT 2: TEST SPECIMEN SUMMARY

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	,
UUT 12140801-4	GT2000 Patient Table
MANUFACTURER:	GE Hangwei Medical Systems CO. LTD.
IDENTIFICATION:	Model No.: 5121647-3
_	/
DESCRIPTION:	System Component of the LightSpeed VCT System GT2000 N9 Patient Table Test specimen included a simulated patient load of 550 lb. Seismic Kit
MOUNTING:	Floor: (4) – 5/8" dia GR 8 bolts w/ GEHC supplied patient table foot assembly.



#### PROPERTIES: CODEDIMENSIONS (in.) LOWEST RESONANT FREQUENCY (Hz.) Weight (lb.) Width Depth Height **Eront-Axis** Side-Axis Vertical-Axis 25.6 114.5 19.2 / 41.3 1146+550 Patient 7.1 2.7 5.7 SHAKE TABLE TEST PARAMETERS **TEST CRITERIA** CODE SDS A<sub>FLX-H</sub> $A_{RIG-H}$ $A_{\text{FLX-V}}$ $A_{RIG-V}$ 2.0 CBC 2016 0 68

	tructural integrity and fu	Marcovi V	VVVAAAAAAA		7. 6				
UUT 12131201-1	GOC6.6 Cons	ole	ATE:	07/	12/2019	9			
MANUFACTURER:	General Electric Con	npany		VANADAVAAAD			1	THE IL	
IDENTIFICATION:	Model No.: 5212920	-150						-	
		Op, W							
DESCRIPTION:	System component of	of the Discove	4	UII		501			
MOUNTING:	Floor mounted using through GEHC supp							Jie J	A PAR
	interface plate.	,		o to arai	minum			0	100 × 100 ×
PROPERTIES:								0	1903
PROPERTIES:						LOW	EST RESONA	ANT FREQUE	NCY (Hz.)
PROPERTIES: Width	interface plate.	Height			eight (lb.)	LOW Side -Axis		ANT FREQUEN	NCY (Hz.) Vertical-Axis
	interface plate.  DIMENSIONS (in.)						Fror		,
Width 48.74	DIMENSIONS (in.)	Height			eight (lb.)	Side -Axis	Fror	nt-Axis	Vertical-Axis
Width 48.74	DIMENSIONS (in.)  Depth 46.54 / 54.74	Height		We	eight (lb.)	Side -Axis	Fror	nt-Axis	Vertical-Axis
Width 48.74 SHAKE TABLE T	DIMENSIONS (in.)  Depth  46.54 / 54.74  EST PARAMETERS	Height 26.7 / 34	.7	We	eight (lb.) 405	Side -Axis 6.2	Fror	nt-Axis	Vertical-Axis 22.9



### **GE HEALTHCARE**

### ATTACHMENT 2: TEST SPECIMEN SUMMARY

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Power Distribution Unit
GE Hangwei Medical Systems CO., LTD
Model No.: 2326492-61
System component of the Optima CT580 System
Floor mounted using (4) – 3/8" dia. socket head bolts through GEHC supplied mounting brackets to aluminum interface plate.



	DIMENSIONS (in.)	E		LOWES	ST RESONANT FREC	QUENCY (Hz.)
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
27.6	27.6 21.7		796+22 brackets	15.7	19.9	45
SHAKE TABLE T	EST PARAMETERS	17		N.S.		
CODE	TEST CRITERIA	S <sub>DS</sub> O	z/hP-0423 <sub>F</sub> -10	A <sub>FLX-H</sub>	A <sub>RIG-H</sub> A <sub>FL</sub>	X-V ARIG-V
CBC 2016	ICC-ES AC156-15	7	1.0	3.2	2.40 1.7	74 0.70

UUT 12180501-1	Revolution Frontier Gantry (HDe6) 2019
MANUFACTURER:	GE Healthcare
IDENTIFICATION:	Model No.: 5232085-203 Serial No.: HDE6G – 002
DESCRIPTION:	Component of the Revolution Frontier CT system. Revolution Gantry (HDe6) Configured with seismic options.
MOUNTING:	Rigid Base (Floor) Mounted using (4) – 5/8" diameter SAE J429 Grade 8 bolts to fixture plate.

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Longit -Axis	Transv-Axis	Vert-Axis
88.7	41.6	74.8	4061 GE Reported 4141 Measured	9.18	9.18	7.18
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS CODE: 2016						CODE: 2016 CBC
S <sub>DS</sub> (G)	z/h	l <sub>P</sub>	A <sub>FLX-H</sub> (G)	A <sub>RIG-H</sub> (G)	A <sub>FLX-V</sub> (G)	A <sub>RIG-V</sub> (G)
2.0 2.5	1 0	1.5	3.2	2.4	1.68	0.68
Unit satisfied AC156 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						



### ATTACHMENT 2: TEST SPECIMEN SUMMARY

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UUT 12180501-2	Console Ass	sembly (HDe6)				
MANUFACTURER:	GE Healthcare					
IDENTIFICATION:	Model No.: 5940904 Serial No.: HDe60	/ · •				
DESCRIPTION:	Component of the F Open style console HP Z840 Computer	Revolution Frontier CT s	ystem.	10		
MOUNTING:	Console Anti Seism - (2) – M6 x 16 10.9 (P/N 2262896-30) - (2) – Flat washers	mounting assembly (3 lic Bracket (P/N 535714 Class bolts (Torque = 7	8-3) each w/ 7.9 N-m)			
DIMENSIONS (in.)			LOWEST RESONANT FREQUENCY (Hz.)			
Width	Depth	Height 1	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
15.7	26.4	22.7	138	14.46	30.24	35.92
ICC-ES AC156 SH	AKE TABLE TEST PA	RAMETÉRS	)SAPD			CODE: 2016 CBC
S <sub>DS</sub> (G)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (G)	A <sub>RIG-H</sub> (G)	A <sub>FLX-V</sub> (G)	A <sub>RIG-V</sub> (G)
2.0 2.5	1 0	1.5	SP-0423-10	2.4	1.68	0.68
Unit satisfied AC156	6 requirements for stru	ctural integrity and mar	nufacturer requiremen	nts for functionality afte	r AC156 test.	

UUT 12180501-3	NIO HD64 Co	nsole	MMM	9		
MANUFACTURER:	GE Healthcare	Z DATE	: 07/12/2019			
IDENTIFICATION:	Model No.: 5212920-1 Serial No.: HDe6BO_0			COD®		
DESCRIPTION:	Component of the Rev NIO style console	volution Discovery C	Tsystem. DING			
MOUNTING:	Rigid Base (Floor) mo GE console to floor m Console Anti Seismic - (2) – M6 x 16 10.9 C (P/N 2262896-2) - (2) – Flat washers (F - (1) – 3/8" dia. ASTM washer.	ounting assembly (4 Bracket (P/N 53571 lass bolts (Torque=7/N 2001-M8-02)	48) each w/ 7.9 N-m)			
	DIMENSIONS (in.)			LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
18.5	29	25.8	162.5	14.77	18.32	18.5
ICC-ES AC156 SHA	AKE TABLE TEST PARA		•	CODE: 2016 CBC		
S <sub>DS</sub> (G)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (G)	A <sub>RIG-H</sub> (G)	A <sub>FLX-V</sub> (G)	A <sub>RIG-V</sub> (G)
2.0 2.5	1 0	1.5	3.2	2.4	1.68	0.68
Unit satisfied AC156	6 requirements for struct	ural integrity and ma	anufacturer requiremen	ts for functionality after	er AC156 test.	



### ATTACHMENT 2: TEST SPECIMEN SUMMARY

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UUT 1218181-1	Console Ass	sembly				
MANUFACTURER:	GE Healthcare	,		- 1	0-0-	
IDENTIFICATION:	Model No.: 5940904 Serial No.: 4600490	·/ · <del>-</del>				
DESCRIPTION:		Revolution Frontier CT ounted in an open styl				
MOUNTING:	Console Anti Seism - (2) – M6 x 16 flang RoHS fastener (Tc - (2) – Flat washers	mounting assembly (3 ic Bracket (P/N 53571 ge screw, hexagon soorque=7.9 N-m) (P/N 2	48-3) each w/ cket, black oxide (262896-30)			
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
15.7	26.4	22.7	142.2	15.12	34.41	48.65
ICC-ES AC156 SHA	KE TABLE TEST PA	RAMETERS				CODE: 2016 CBC
S <sub>DS</sub> (G)	z/h	△ I <sub>P</sub>	A <sub>FLX-H</sub> (G)	A <sub>RIG-H</sub> (G)	A <sub>FLX-V</sub> (G)	A <sub>RIG-V</sub> (G)
2.0 2.5	1 0	1.5	3.2	2.4 日	1.68	0.68
Unit satisfied AC156	requirements for stru	uctural integrity and ma	anufacturer requiremen	ts for functionality after	r AC156 test.	

