



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: **OSP – 0616**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: **GE HEALTHCARE**

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: **Discovery MI PET-CT System**

Product Type: PET & CT medical imaging systems.

Product Model Number: See Attachment 1

(List all unique product identification numbers and/or part numbers)

General Description: System components of multiple-component medical imaging systems. Special Seismic Certification is limited to functions related to Computed Tomography (CT) medical imaging services. Seismic enhancements made to the test units and modifications required to address the anomalies observed during testing shall be incorporated into the certified units

Mounting Description: Rigid base mounted.

Applicant Information

Applicant Company Name: **EASE LLC**


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.

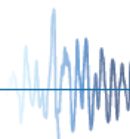
Signature of Applicant: 

Date: July 23, 2019

Title: Principal Engineer

Company Name: EASE LLC

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





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: EASE LLC

Name: Jonathan Roberson, S.E. California License Number: S4197

Mailing Address: 5877 Pine Ave. Suite 210, Chino Hills, CA 91709

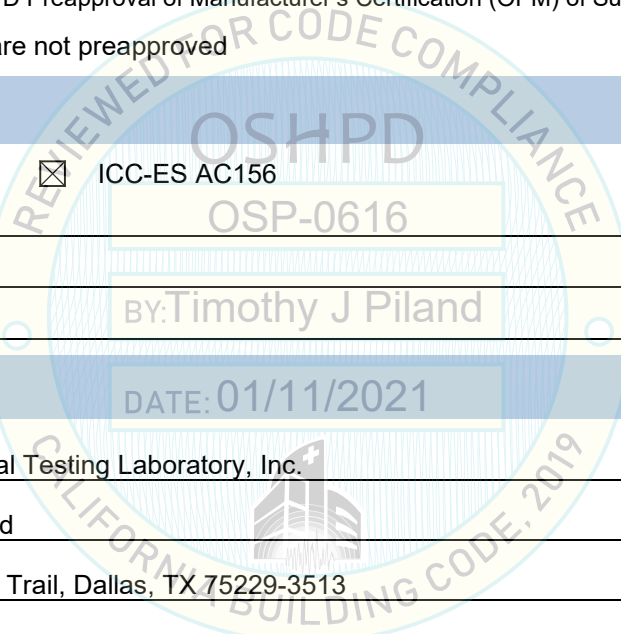
Telephone: (909) 606-7622 Email: j.roberson@easeco.com

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

Certification Method

- Testing in accordance with: ICC-ES AC156
- Other (Please Specify): _____



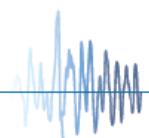
Testing Laboratory

Company Name: Environmental Testing Laboratory, Inc.

Contact Name: Brady Richard

Mailing Address: 11034 Indian Trail, Dallas, TX 75229-3513

Telephone: (972) 247-9657 Email: brady@etldallas.com





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Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: [X] Yes [] No

Design Basis of Equipment or Components (Fp/Wp) = See Attachment 1; Table 2

S_Ds (Design spectral response acceleration at short period, g) = 1.52

ap (In-structure equipment or component amplification factor) = See Attachment 1; Table 2

Rp (Equipment or component response modification factor) = See Attachment 1; Table 2

Omega_0 (System overstrength factor) = See Attachment 1; Table 2

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See Attachment 2

Overall dimensions and weight (or range thereof) = See Attachment 1; Table 1

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: [] Yes [X] No

Design Basis of Equipment or Components (V/W) =

S_Ds (Design spectral response acceleration at short period, g) =

S_D1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (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 [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [] Drawings [] Calculations [] Manufacturer's Catalog

[X] Other(s) (Please Specify): Attachments 1 & 2

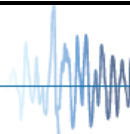
OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2025

Signature: [Handwritten Signature]
Print Name: Timothy J. Piland

Date: January 11, 2021
Title: SSE

Special Seismic Certification Valid Up to: S_Ds (g) = See Above z/h = See Above

Condition of Approval (if applicable):



ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

TABLE 1: SEISMIC CERTIFIED SYSTEMS & COMPONENTS ^[6]

Manufacturer		GE Healthcare						
System		Discovery MI PET/CT System ^[2]						
COMPONENT	MODEL NUMBER	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT	BASIS ^[1]	
		W	D	H				
PET-CT GANTRIES ^[7]								
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	UUT-1901-1	
25cm Columbia PET Gantry, Weldment	5990025-22				2443			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	SAME	
25cm Columbia PET Gantry, Weldment	5990025-20				2443			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
20cm Columbia PET Gantry, Weldment	5990020-20				2402			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
15cm Columbia PET Gantry, Weldment	5990015-20				2380			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
30cm Columbia PET Gantry, Weldment	5990030-30				2553			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
25cm Columbia PET Gantry, Weldment	5990025-30				2443			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
20cm Columbia PET Gantry, Weldment	5990020-30				2402			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	INT	
15cm Columbia PET Gantry, Weldment	5990015-30				2380			
Revolution EVO CT Gantry, PET Specific	5454001-170	77.4	93.59	76	3940	Floor	UUT-1601-1	
25cm Columbia PET Gantry	5990025				3915			
PATIENT TABLES								
PROSCAN Patient Table ^[3]	5101900	26	136	22 / 42	1808 ^[4]	Floor	UUT-10390-3	
Mobile Ready Global PET-CT Table Ed3	5101900-20	26	136	22 / 42	1808	Floor	SAME	
POWER DISTRIBUTION								
NGPDU-61	2326492-61	27.6	21.7	41.8	818	Floor	UUT-1313-2	
Power Distribution Box (PDB)	5627940	19.7	9.5	24.8	68	Wall	UUT-1901-3	
CONSOLES								
Console Assembly (HDe6) ^[3]	5940904-10	15.7	26.4	22.7	138	Floor	UUT-1805-2	
Revolution EVO Open Console, WSO	5946404-21	15.7	26.4	22.7	138	Floor	SAME	
Revolution Frontier Open Console ^[3]	5940904-12	15.7	26.4	22.7	142.2	Floor	UUT-1818-1	
Operator Console – Z8G4	5946404-22	15.7	26.4	22.7	142.2	Floor	SAME	
Revolution EVO Open Console w/ Z8G4	5946404-21_Z8G4	15.7	26.4	22.7	142.2	Floor	SAME	
OTHER EQUIPMENT								
Lytron Chiller	5582166	22	28	32	314 ^[5]	Floor	UUT-1601-3	
Mount	Floor (Rigid Base): free-standing, base-mounted condition with the component rigidly attached to a supporting structure and no lateral support above the base. Wall: refers to a condition where the unit is fully supported- both vertically and laterally – by a building wall or partition.							

Table continues next page

ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

TABLE 1: SEISMIC CERTIFIED SYSTEMS & COMPONENTS [6]

Manufacturer	GE Healthcare						
System	Discovery MI PET/CT System [2]						
COMPONENT	MODEL NUMBER	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT	BASIS [1]
		W	D	H			
Notes	<ol style="list-style-type: none"> BASIS: <ul style="list-style-type: none"> UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program. SAME: Model is physically, mechanically & electrically the same as test specimen. Difference is limited to model number, color and/or software. INT (Interpolate or extrapolate): indicates a model that was not specifically tested, and by which seismic qualification was established through evaluation of testing of other, similar models in the product line. Requires use of GE Seismic Kit (P3000BK) or equivalent. Model is not part of the listed system; it is included only to provide a basis for seismic qualification of a similar component of the system. Patient Table weight does not include the 300 lb. simulated patient load present during testing. Chiller operating weight: full of fluid. Seismic certification is limited to functions related to Computed Tomography (CT) for diagnostic assessment of trauma. Removable service rails for PET gantry shall be stored separate from gantry during operation. 						

TABLE 2: ASCE 7-10 DESIGN BASIS FOR EQUIPMENT

COMPONENT	MODEL NO.	F _p /W _p	S _{DS}	z/h	a _p	R _p	Ω ₀
PET-CT GANTRIES							
Revolution EVO CT Gantry, PET Specific	5454001-170	1.82	1.52	1	1	1 ½	1 ½
25cm Columbia PET Gantry	5990025						
25cm Columbia PET Gantry	5990025-22						
25cm Columbia PET Gantry	5990025-20						
20cm Columbia PET Gantry	5990020-20						
15cm Columbia PET Gantry	5990015-20						
PATIENT TABLES							
PROSCAN Patient Table	5101900	1.82	1.52	1	1	1 ½	1 ½
Mobile Ready Global PET-CT Table Ed3	5101900-20						
POWER DISTRIBUTION							
NGPDU-61	2326492-61	1.10	1.52	1	1	2 ½	2
Power Distribution Box (PDB)	5627940						
CONSOLES							
Console Assembly (HDe6)	5940904-10	1.10	1.52	1	1	2 ½	2
Revolution EVO Open Console, WSO	5946404-21						
Revolution Frontier Open Console	5940904-12						
Operator Console – Z8G4	5946404-22						
EVO Open Console with Z8G4	5946404-21_Z8G4						
OTHER EQUIPMENT							
Lytron Chiller	5582166	1.10	1.52	1	1	2 ½	2

ATTACHMENT 2: TEST UNIT SUMMARY

UUT-1901-1 Discovery MI PET-CT Gantry						
<i>Manufacturer:</i> GE Healthcare						
<i>Identification:</i>		CT Gantry	PET Gantry			
Model No.		5454001-170	5990025-22			
Serial No.		CJRPX16000014CN	CL251900001PT			
<i>Description:</i> System component of the Discovery MI PET-CT System. <ul style="list-style-type: none"> • Revolution EVO CT Gantry, PET Specific • 25cm Columbia PET Gantry (Weldment) The tested configuration included both a PET gantry and a CT gantry in a complete PET-CT assembly. Seismic Kit (P3000BK) installed. Unit included enhancements to construction not found on then-standard production units. These enhancements subsequently include in revision of Seismic Kit (P3000BK).						
<i>Mounting:</i> Rigid Base (Floor) mounted using: (8) – 5/8" dia. SAE J429 Grade 8 bolts.						
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
77.4	93.59	76	6383 (reported) 6206 (measured)	7.4	5.9	10.7
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{DS} (G)	z/h	I _p	A _{FLEX-H} (G)	A _{RIG-H} (G)	A _{FLEX-V} (G)	A _{RIG-V} (G)
2.0 2.5	1.0 0.0	1.5	3.20	2.40	1.68	0.68
Unit maintained structural integrity and satisfied manufacturer requirement for CT diagnostic imaging.						



UUT-1601-1 Discovery MI PET-CT Gantry						
<i>Manufacturer:</i> GE Healthcare						
<i>Identification:</i>		CT	PET			
Model No.		5454001-170	5990025			
Serial No.		10002	10002			
<i>Description:</i> System component of the Discovery MI PET-CT System: <ul style="list-style-type: none"> • Revolution EVO CT Gantry, PET Specific • 25cm Columbia PET Gantry The tested configuration included both a PET gantry and a CT gantry in a complete PET-CT assembly. Seismic Kit (P3000BK) installed. Unit included enhancements to construction not found on then-standard production units. These enhancements subsequently include in revision of Seismic Kit (P3000BK).						
<i>Mounting:</i> Rigid Base (Floor) mounted using: (11) – 5/8" diameter SAE J429 Grade 8 bolts.						
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
77.4	93.59	76	7855	8.6	8.1	14.7
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{DS} (G)	z/h	I _p	A _{FLEX-H} (G)	A _{RIG-H} (G)	A _{FLEX-V} (G)	A _{RIG-V} (G)
2.0 2.5	1.0 0.0	1.5	3.20	2.40	1.68	0.68
Unit maintained structural integrity and satisfied manufacturer requirement for CT diagnostic imaging.						



ATTACHMENT 2: TEST UNIT SUMMARY

UUT-1901-3 Power Distribution Box							
<i>Manufacturer:</i>		CETC ECRIEPOWER (ANHUI) CO., LTD					
<i>Identification:</i>		Model No. 5627940					
		Serial No.: 56200000003					
<i>Description:</i>		System component of the Discovery MI PET-CT System. CT/PET Panel Door secured closed with M8-8.8 SHCS at two locations.					
<i>Mounting:</i>		Rigid wall mounted using: (4) - 1/4" dia. Hex Washer Head, self-tapping, self-threading sheet metal (TEK) screws w/ - (2) - 1.25" O.D. x 5/16" I.D. fender washers at top and - (2) - standard washers at bottom to 16ga. backing plate.					
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)			
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis	
19.7	9.5	24.8	66	---	---	---	
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS							CODE: 2016 CBC
S _{Ds} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)	
2.0	1	1.5	3.2	2.4	1.68	0.68	
2.5	0						
Unit maintained structural integrity and remained functional per manufacturer requirement							



UUT-1805-2 Console Assembly (HDE6)							
<i>Manufacturer:</i>		GE Healthcare					
<i>Identification:</i>		Model No.: 5940904-10 Serial No.: HDE60 - 002					
<i>Description:</i>		Component of the Revolution Frontier CT system. Open style console HP Z840 Computer					
<i>Mounting:</i>		Rigid Base (Floor) mounted using: GE console to floor mounting assembly (3 locations total): - Bracket (P/N 5357148-3) each w/ - (2) - M6 x 16 10.9 Class bolts (Torque = 7.9 N-m) (P/N 2262896-30) - (2) - Flat washers (P/N 2001-M8-02) - 3/8" dia. ASTM A574 Socket Head Cap Screw w/ washer.					
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)			
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis	
15.7	26.4	22.7	138	14.46	30.24	35.92	
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS							CODE: 2016 CBC
S _{Ds} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)	
2.0	1	1.5	3.2	2.4	1.68	0.68	
2.5	0						
Unit maintained structural integrity and remained functional per manufacturer requirement							



ATTACHMENT 2: TEST UNIT SUMMARY

UUT-10390-3 PROSCAN Patient Table						
<i>Manufacturer:</i>		GE Healthcare				
<i>Identification:</i>		P/N: 5101900 S/N: 176453HM9				
<i>Description:</i>		System component of several GEHC PET/CT systems. Tested as component of Discovery PET/CT 690 System				
<i>Mounting:</i>		Rigid Base (Floor) Mounted using (4) - 5/8" diameter SAE J429 Grade 8 bolts to interface plate.				
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
25.6	135.8	22/ 42	1808	---	5.3	>33
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{DS} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
1.52	1	1.5	2.43	1.82	1.02	0.41
Unit maintained structural integrity and remained functional per manufacturer requirement						



UUT-1313-2 NGPDU-61						
<i>Manufacturer:</i>		GE Hangwei Medical Systems CO., LTD				
<i>Identification:</i>		Model No.: 2326492-61 Serial No.: 322132HM2				
<i>Description:</i>		System component of several GEHC CT systems. Tested as component of Optima CT580 System.				
<i>Mounting:</i>		<u>Rigid Base (Floor) mounted using:</u> (2) – 3/8" dia. ASTM A574 Socket Head Cap Screws w/ washer through GE mounting brackets to floor plate. <u>GE mounting assembly including:</u> (2) – Seismic Bracket, System Cabinet (P/N 2354563-2) Each bracket mounted to cabinet w/ (2) – M10-1.5 X25mm Class 12.9 Socket Head Cap Screw, Black Oxide (Torque= 38.4 N-m) (2) – M10 Lock Washer (P/N 2203-M10-07) (2) – M10 Flat Washer (P/N 2000-M10-03)				
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
27.6	21.7	41.8	796 + 22 brackets = 818	15.7	19.9	45
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{DS} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
2.0 2.6	1.0 0.0	1.5	3.20	2.40	1.74	0.70
Unit maintained structural integrity and remained functional per manufacturer requirement						



ATTACHMENT 2: TEST UNIT SUMMARY

UUT-1601-3 Discovery PET-CT Chiller						
Manufacturer:		GE Healthcare				
Identification:		Lytron P/N: RC045J03YY3C017 REV B				
		Lytron Serial No.: 898088-01				
		GEHC P/N: 5582166				
Description:		System component of the Discovery PET-CT System. Unit included enhancements to construction not found on then-standard production units. These enhancements subsequently released Chiller Seismic Collector (P/N 5748212), an element of Seismic Kit (P3000BK). Unit include contents at operating level.				
Mounting:		Rigid Base (Floor) mounted using (4) – ½” diameter SAE J429 Grade 8 bolts using GE provided mounting brackets.				
DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vert-Axis
21.375	27.75	31.875	313.5	25.9	10.6	16.7
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{Ds} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
2.0	1.0	1.5	3.20	2.40	1.68	0.68
2.5	0.0					
Unit maintained structural integrity and remained functional per manufacturer requirement						



UUT-1818-1 Console Assembly						
MANUFACTURER:		GE Healthcare				
IDENTIFICATION:		Model No.: 5940904-12 Serial No.: 460049CN1				
DESCRIPTION:		Component of the Revolution Frontier CT System. HP Z8 Computer mounted in an open style console.				
MOUNTING:		Rigid Base (Floor) mounted using: GE console to floor mounting assembly (3 locations total): Console Anti Seismic Bracket (P/N 5357148-3) each w/ - (2) – M6 x 16 flange screw, hexagon socket, black oxide RoHS fastener (Torque=7.9 N-m) (P/N 2262896-30) - (2) – Flat washers (P/N 2001-M8-02) - (1) – 3/8” dia. ASTM A574 Socket Head Cap Screw w/ washer.				
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 SHAKE TABLE TEST PARAMETERS						CODE: 2016 CBC
S _{Ds} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
2.0	1	1.5	3.2	2.4	1.68	0.68
2.5	0					
Unit satisfied AC156 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						

