



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT**

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

OFFICE USE ONLY

**APPLICATION #: OSP-0628**

**HCAI Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: GE Healthcare

Manufacturer's Technical Representative: Tom Farrow

Mailing Address: 3000 N. Grandview Blvd., Waukesha, WI 531881696

Telephone: (888) 406-1101

Email: Tom.Farrow@gehcseismic.com

**Product Information**

Product Name: Revolution Maxima / Revolution Ace

Product Model Number(s): See Attachment 1.

Product Category: CT Systems

Product Sub-Category: NA

General Description: System components of multiple-component medical diagnostic imaging systems. Special Seismic Certification is limited to components identified in Attachment 1.

Mounting Description: Base Mounted Rigid

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

**Applicant Information**

Applicant Company Name: EASE

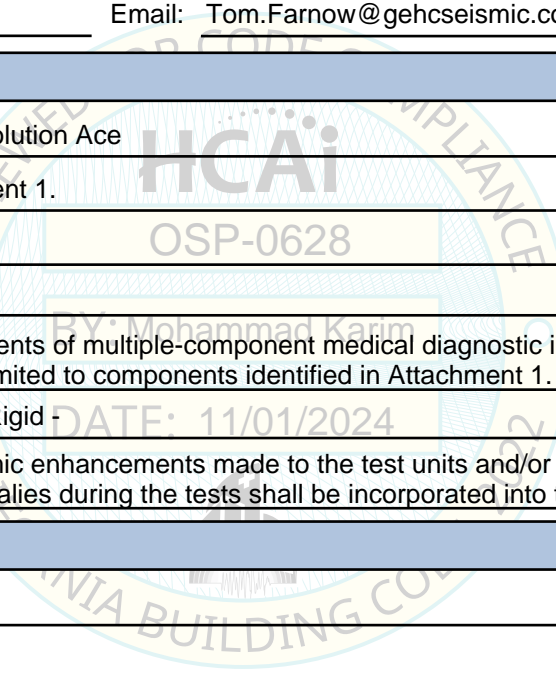
Contact Person: Jonathan Roberson

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

Telephone: (909) 606-7622

Email: j.roberson@easeco.com

Title: SE





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

Company Name: EASE LLC  
Name: Jonathan Roberson California License Number: S4197  
Mailing Address: 5877 Pine Ave., Suite 210, Chino Hills, CA 91709  
Telephone: (951) 295-1892 Email: jon@EASECo.com

**Certification Method**

GR-63-Core       ICC-ES AC156       IEEE 344       IEEE 693       NEBS 3  
 Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)  
Contact Person: Jeremy Lange  
Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513  
Telephone: (972) 247-9657 Email: info@etldallas.com





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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = See Attachment 1

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1); 2.50 (z/h = 0)

$a_p$  (Amplification factor) = See Attachment 1

$R_p$  (Response modification factor) = See Attachment 1

$\Omega_0$  (System overstrength factor) = See Attachment

$I_p$  (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment 2

Overall dimensions and weight = See Attachment 1

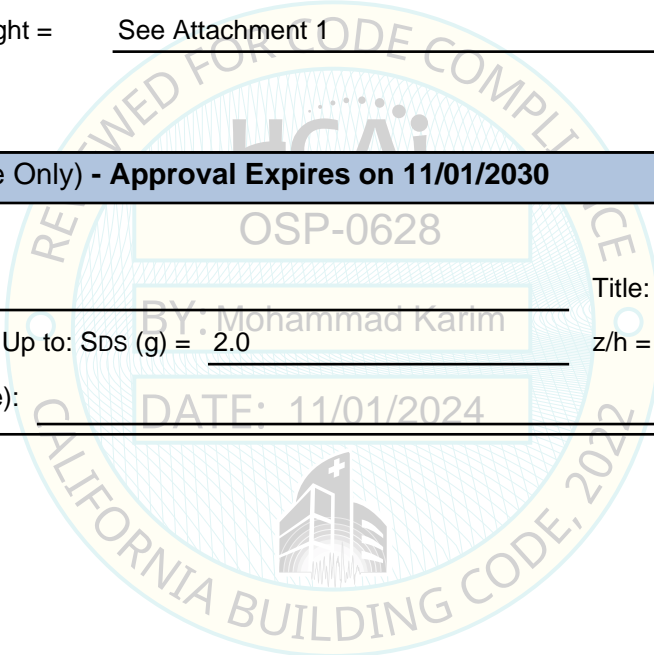
**HCAI Approval (For Office Use Only) - Approval Expires on 11/01/2030**

Date: 11/1/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = 1

Condition of Approval (if applicable): DATE: 11/01/2024



**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**


**TABLE 1:**


Manufacturer		GE HealthCare						S <sub>DS</sub> = 2.0 at z/h = 1			
System		Revolution Maxima / Revolution Ace						S <sub>DS</sub> = 2.5 at z/h = 0			
COMPONENT	MODEL NUMBER	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT <sup>[6]</sup>	BASIS <sup>[1]</sup>	F <sub>P</sub> /W <sub>P</sub>	a <sub>P</sub>	R <sub>P</sub>	Ω <sub>0</sub>
		W	D	H							
<b>GANTRIES</b> <sup>[5]</sup>											
Revolution Maxima Gantry	6670000-2	80.4	40.2	76.3	3434	Floor	UUT1914-1	2.40 1.13	1	1 ½	1 ½
Revolution Maxima Gantry	6670000-4	80.4	40.2	76.3	3434	Floor	SAME				
Revolution Maxima Gantry	6670000-200	80.4	40.2	76.3	3434	Floor	SAME				
Revolution Maxima Gantry	6670000-400	80.4	40.2	76.3	3434	Floor	SAME				
Revolution Ace Gantry	6670000-3	80.4	40.2	76.3	3434	Floor	SAME				
Revolution Ace Gantry	6670000-5	80.4	40.2	76.3	3434	Floor	SAME				
<b>PATIENT TABLES</b> <sup>[5]</sup>											
<i>GT1700V Table</i>	<i>5122080-11</i> <sup>[4]</sup>	25.6	93.3	19.2 / 41.2	1059 <sup>[2]</sup>	Floor	UUT1126-2	2.40 1.13	1	1 ½	1 ½
GT1700V Table	5122080-12	25.6	93.3	19.2 / 41.2	1059	Floor	SAME				
<i>GT2000 Table</i>	<i>5121647-3</i> <sup>[4]</sup>	25.6	114.5	18.3 / 41.3	1146 <sup>[7]</sup>	Floor	UUT1408-4	2.40 1.13	1	1 ½	1 ½
GT2000 Table	5121647-4	25.6	114.5	18.3 / 41.3	1146	Floor	SAME				
<b>CONSOLES</b>											
Open Console w/ Z8G4	5946404-15	15.8	26.4	22.7	142 <sup>[3]</sup>	Floor	UUT1914-2	1.44 1.13	1	2 ½	2
Open Console w/ Z8G4	5946404-25	15.8	26.4	22.7	142 <sup>[3]</sup>	Floor	SAME				
Open Console with Z8G5	5946404-18	17.6	26.4	22.7	136	Floor	UUT2415-1	1.44 1.13	1	2 ½	2
Open Console with Z8G5	5946404-28	17.6	26.4	22.7	136	Floor	SAME				
Open Console with Z8G5	5946404-118	17.6	26.4	22.7	136	Floor	SAME				
Open Console with Z8G5	5946404-218	17.6	26.4	22.7	136	Floor	SAME				
<b>POWER DISTRIBUTION</b>											
Power Distribution Unit	2326492-80 <sup>[4]</sup>	27.6	21.7	41.8	841 <sup>[3]</sup>	Floor	UUT1126-3	1.44 1.13	1	2 ½	2
Power Distribution Unit	2326492-81	27.6	21.7	41.8	841 <sup>[3]</sup>	Floor	SAME				
MOUNT	Floor (Rigid Base): free-standing, base-mounted tower configuration with the component rigidly attached to a supporting structure and no lateral support above the base.										
NOTES	<ol style="list-style-type: none"> <li>BASIS <ul style="list-style-type: none"> <li>UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program.</li> <li>SAME: Model is physically, mechanically &amp; electrically identical to a tested unit, except for possible variations in model number, color and/or software.</li> </ul> </li> <li><i>Patient Table (GT1700V) weight does not include 350 lb. patient load present during testing.</i></li> <li>Weight includes mounting bracket hardware.</li> <li><i>Gray italic formatting indicates unit is not a component of system and used as basis for seismic qualification only.</i></li> <li>Requires use of additional GE bushing kit B76632DA (P/N 5841169).</li> <li>See Attachment 2 for additional mounting information.</li> <li><i>Patient Table (GT2000) weight does not include 550 lb. patient load present during testing.</i></li> </ol>										



**ATTACHMENT 2: TEST SPECIMEN SUMMARY**


ATTACHMENT PAGE | 1 OF 3

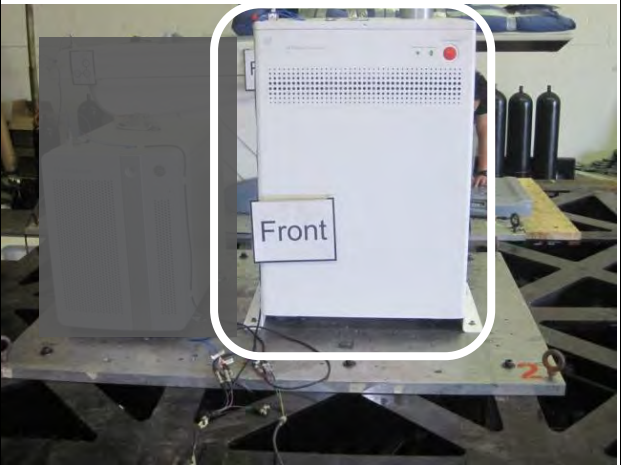
<b>UUT 1914-1 Revolution Maxima CT Gantry</b>						
<i>Manufacturer:</i> GE Hangwei Medical Systems Co., LTD.						
<i>Identification:</i> Model No.: 6670000-2 Serial No.: 000000HM11						
<i>Description:</i> Component of Revolution Maxima - Non-tilt Gantry - Touchscreen display on front (x2) - Configuration controlled verification unit that is equivalent to standard production.						
<i>Mounting:</i> <u>Rigid Base (Floor) mounted using:</u> (4) – 5/8” dia. SAE J429 Grade 8 bolts to test fixture. GE Bushing Kit P/N 5841169.						
Dimensions (in.)				Lowest Resonant Frequency (Hz.)		
Width	Depth	Height	Weight (lb.)	Front-Axis	Side-Axis	Vertical-Axis
80.4	40.2	76.3	3434	9.9	11.6	14.0
<b>ICC-ES AC156 Shake Table Test Parameters</b>						<b>Code: 2022 CBC</b>
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 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						

<b>UUT 1914-2 Open Console w/ Z8G4</b>						
<i>Manufacturer:</i> GE Hangwei Medical Systems Co., LTD.						
<i>Identification:</i> Model No.: 5946404-15 Serial No.: 000000HM1						
<i>Description:</i> Component of the Revolution Maxima / Revolution Ace CT Systems - HP Z8G4 Computer - Open style console - Configuration controlled verification unit that is equivalent to standard production.						
<i>Mounting:</i> <u>Rigid Base (Floor) mounted using:</u> GE Console Anchor Kit 5812703-2 (3) – 3/8” dia. SAE J429 Grade 8 bolts to test fixture.  NOTE: Console Anchor Kit 5812703-2 is included standard w/ console.						
Dimensions (in.)				Lowest Resonant Frequency (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
15.8	26.4	22.7	141.5 w/ brackets	14.6	30.1	26.2
<b>ICC-ES AC156 Shake Table Test Parameters</b>						<b>Code: 2022 CBC</b>
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 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						

**ATTACHMENT 2: TEST SPECIMEN SUMMARY**


ATTACHMENT PAGE | 2 OF 3


<b>UUT 1126-2 GT1700V Table</b>						
<i>Manufacturer:</i> GE Hangwei Medical Systems Co., LTD						
<i>Identification:</i> Model No.: 5122080-11						
<i>Description:</i> System component of the <b>Optima CT660 System</b> . Also used with other CT systems. Test specimen included a simulated patient load of 350 lb.  Requires additional kit as follows: <ul style="list-style-type: none"> <li>• B7660MY (Optima CT660 system)</li> <li>• B76632DA (Revolution Maxima / Revolution Ace)</li> </ul>						
<i>Mounting:</i> <u>Rigid Base (Floor) mounted using</u> (4) – 5/8" dia. hex head bolts to test fixture.						
Dimensions (in.)				Lowest Resonant Frequency (Hz.)		
Width	Depth	Height	Weight (lb.)	Transverse-Axis	Longitudinal-Axis	Vertical-Axis
25.6	93.3	19.2 / 41.2		1059+ 350 Patient	3.9	15.2
<b>ICC-ES AC156 Shake Table Test Parameters</b>						<b>Code: 2022 CBC</b>
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 2.6	1 0	1.5	3.2	2.4	1.74	0.70
Unit satisfied AC156 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						

<b>UUT 1126-3 Power Distribution Unit (PDU)</b>						
<i>Manufacturer:</i> GE Hangwei Medical Systems Co., LTD						
<i>Identification:</i> Model No.: 2326492-80 Serial No.: 270337HM9						
<i>Description:</i> System component of the <b>Optima CT660 System</b> . Also used with other CT systems.						
<i>Mounting:</i> <u>Rigid Base (Floor) mounted using:</u> (4) – 3/8" dia. ASTM A574 Socket Head Cap Screws w/ washer through GE mounting brackets to floor plate. (2 anchors ea. bracket) <u>GE mounting assembly including:</u> (2) – Seismic Bracket, System Cabinet (P/N 2354563-2) Each bracket mounted to cabinet w/: (2) – M10 x 25mm Class 12.9 bolt (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.)	Front-Axis	Side-Axis	Vertical-Axis
27.6	21.7	41.8		841	20.4	20.6
<b>ICC-ES AC156 Shake Table Test Parameters</b>						<b>Code: 2022 CBC</b>
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 2.6	1 0	1.5	3.2	2.4	1.74	0.70
Unit satisfied AC156 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						



**ATTACHMENT 2: TEST SPECIMEN SUMMARY**

<b>UUT-1408-4 GT2000 Patient Table</b>						
<b>MANUFACTURER:</b> GE Hangwei Medical Systems CO. LTD.						
<b>IDENTIFICATION:</b> Model No.: 5121647-3						
<b>DESCRIPTION:</b> Component of the LightSpeed VCT System included as basis for components of Revolution Ascend CT System  550 lb. simulated patient load (not included in tabulated weight).  Unit requires the use of Seismic Kit 5881922 which contains mounting hardware assemblies.						
<b>MOUNTING:</b> <u>Rigid Base:</u> (4) – 5/8" dia GR 8 hex head bolts w/ GEHC supplied patient table foot assembly.						
DIMENSIONS [in]				LOWEST RESONANT FREQUENCY [Hz]		
Width	Depth	Height	Weight [lb]	Transverse-Axis	Longitudinal-Axis	Vertical-Axis
25.6	114.5	35.5	1146	2.7	7.1	5.7
ICC-ES AC156 SHAKE TABLE TEST PARAMETERS						CODE: 2022 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	1	1.5	3.20	2.40	1.68	0.68
2.5	0					
Unit satisfied AC156 requirements for structural integrity and manufacturer requirements for functionality after AC156 test.						

<b>UUT-2415-1 Open Console w/ Z8G5</b>						
<b>Manufacturer:</b> GE Hangwei Medical Systems Co., LTD.						
<b>Identification:</b> Model No.: 5946404-18 Serial No.: 7DC446S147						
<b>Description:</b> Component of the Revolution Maxima / Revolution Ace CT Systems - HP Z8G5 Computer - Open style console.						
<b>Mounting:</b> <u>Rigid Base (Floor) mounted using:</u> GE Console Anchor Kit 5812703-2 (3) – 3/8" dia. SAE J429 Grade 8 bolts to test fixture.  NOTE: Console Anchor Kit 5812703-2 is included standard w/ console.						
Dimensions (in.)				Lowest Resonant Frequency (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
17.6	26.4	22.7	136	11.2	26.3	31.2
ICC-ES AC156 Shake Table Test Parameters						Code: 2022 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	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.						