OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0407 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: **PHILIPS HEALTHCARE**

Manufacturer's Technical Representative: Christopher Cobb

Mailing Address: 595 Miner Road, Highland Heights, OH 44143

Telephone: 440-483-2964 Email: christopher.cobb@philips.com

Product Information

Product Name: **CRC RACK, HOST RACK, AIR COMPRESSOR & UPS**

Product Type: CT medical imaging equipment

Product Model Number: See Attachment 1
(List all unique product identification numbers and/or part numbers)

General Description: Components of Computed Tomography (CT) medical imaging systems. Seismic enhancements made to the test units and modifications required to address the anomalies observed during the tests shall be incorporated into the production 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: (406) 541-EASE (3273) 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: March 17, 2016

Title: Principal Engineer Company Name: EASE LLC

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

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = **See Attachment 1, Table 4**

S_{DS} (Design spectral response acceleration at short period, g) = **See Attachment 1, Table 4**

a_p (In-structure equipment or component amplification factor) = **See Attachment 1, Table 4**

R_p (Equipment or component response modification factor) = **See Attachment 1, Table 4**

Ω_0 (System overstrength factor) = **See Attachment 1, Table 4**

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = **See Attachment 1, Table 4**

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

Overall dimensions and weight (or range thereof) = **See Attachment 1, Table 1, 2, & 3**

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ 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) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (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

☒ Test Report(s) ☐ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Attachments 1 & 2

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: _____ Date: May 4, 2016

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See above z/h = See Above

Condition of Approval (if applicable): _____

TABLE 1: CONSOLES

MANUFACTURER	**PHILIPS HEALTHCARE**
SYSTEM	**Brilliance iCT** **Brilliance 16 CT** **Brilliance 64 CT** **Brilliance Big Bore (BB) CT** **Ingenuity CT** **Ingenuity Flex CT** **Ingenuity CORE CT** **Ingenuity CORE 128 CT**

COMPONENT	PART NO.	DIMENSIONS (IN.) W	D	H	APPROX. WT. (LB.)	MOUNTING	BASIS
LCC CRC RACK DVI [2] including:	455012005711	24.0	35.5	29.9	300	Floor	UUT1
Common Host Computer (CRC) (Dell T3600)	459800398501						
CIRS Computer (Dell T7600)	459800320481						
LCC CRC RACK DVI including:	455012005711	24.0	35.5	29.9	307	Floor	INT
Common Host Computer (CRC) (Dell T3600) [2]	459800398501						
Common Host Computer (CRC) (HP z440) [4]	459800918411						
CIRS Computer (Dell T7600) [2] [3]	459800320511 459800320501 459800320491						
CIRS Computer (HP z840) [4]	459800914241 459800914931 459800940661 459800914091 459800985521						
LCC CRC RACK DVI [4] including:	455012005711	24.0	35.5	29.9	307	Floor	UUT-A3
Common Host Computer (CRC) (HP z440)	459800918411						
CIRS Computer (HP z840)	459800914091						
CRC RACK IMR [2] including:	459800444991	24.0	35.5	29.9	310	Floor	UUT2
CIRS S1 (Dell T7600)	459800320521						
CIRS S2 (Dell T7600)	459800320531						
HOST RACK - IMR [2] including:	459800444981	13.0	35.3	29.9	169	Floor	UUT3
Common Host Computer (CRC) (Dell T3600)	459800398501						
CRC RACK IMR [4] including:	459800444991	24.0	35.5	29.9	316	Floor	UUT-A1
CIRS S1 (HP z840)	459800912731						
CIRS S2 (HP z840)	459800914211						
HOST RACK - IMR [4] including:	459800444981	13.0	35.3	29.9	172	Floor	UUT-A2
Common Host Computer (CRC) (HP z440)	459800918411						

MOUNTING	Floor (Rigid Base) Mount: free-standing, base-mounted tower configuration with the component rigidly attached to a supporting structure and no lateral support above the base.
NOTES	1. BASIS: • UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program. • INT (Interpolate/Extrapolate): indicates a model that was not specifically tested, and by which seismic certification is established through evaluation of testing of other, similar models in the product line. 2. Requires use of Philips Healthcare Gen5 Console Seismic Kit (Part No. 4598 005 86531) or Gen 5.X Console Seismic Kit (Part No. 4598 008 81561) 3. Models listed are depopulated versions of a tested unit. 4. Requires use of Philips Healthcare Gen 5.X Console Seismic Kit (Part No. 4598 008 81561)

TABLE 2: AIR COMPRESSORS

MANUFACTURER	**JUN AIR**
SYSTEM	**Brilliance iCT System** **Brilliance iCT SP System**

COMPONENT	PART NO.	DIMENSIONS (IN.) W	D	H	APPROX. WT. (LB.)	MOUNTING	BASIS
COMPRESSOR-JUN AIR 50/60 HZ	459800191992	21.42	28.86	30.75	200	Floor	UUT-A5
CABINET COMPRESSOR- JUN AIR 50/60 HZ [2]	459800882781	24.3	26	33.7	290	Floor	UUT-A6

MOUNTING	Floor (Rigid Base) Mount: free-standing, base-mounted tower configuration with the component rigidly attached to a supporting structure and no lateral support above the base.
NOTES	1. BASIS: • UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program. • INT (Interpolate/Extrapolate): indicates a model that was not specifically tested, and by which seismic certification is established through evaluation of testing of other, similar models in the product line. 2. Requires use of Philips Healthcare Seismic Kit P/N 459801067821.

TABLE 3: UPS

MANUFACTURER	**Emerson Network Power Co. Ltd**
SYSTEM	**Brilliance iCT** **Ingenuity CT** **Brilliance 16 CT** **Ingenuity Flex CT** **Brilliance 64 CT** **Ingenuity CORE CT** **Brilliance Big Bore (BB) CT** **Ingenuity CORE 128 CT**

COMPONENT	PART NO.	DIMENSIONS (IN.) W	D	H	APPROX. WT. (LB.)	MOUNTING	BASIS
Emerson CT-3000VA-230V UPS	459800306392	6.75	23.7	16.9	150	Floor	UUT-B1

MOUNTING	Rigid Base Mount (Floor Mount): free-standing, base-mounted tower configuration with the component rigidly attached to a supporting structure and no lateral support above the base.
NOTES	1. BASIS: • UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program. 2. Requires use of Philips Healthcare iCT Seismic Mount Kit (P/N 459800140161) or Ingenuity/Big Bore Seismic Kit (P/N 459800140171).

TABLE 4: ASCE 7-10 DESIGN BASIS FOR EQUIPMENT

COMPONENT	PART No.	F_P/W_P	S_{DS}	z/h	a_P	R_P	Ω_0
LCC CRC RACK DVI including: Common Host Computer (CRC) (Dell T3600) Common Host Computer (CRC) (HP z440) CIRS Computer (Dell T7600) CIRS Computer (Dell T7600) CIRS Computer (Dell T7600) CIRS Computer (Dell T7600) CIRS Computer (HP z840) CIRS Computer (HP z840) CIRS Computer (HP z840) CIRS Computer (HP z840) CIRS Computer (HP z840) CIRS Computer (HP z840)	455012005711 459800398501 459800918411 459800320481 459800320511 459800320501 459800320491 459800914091 459800914241 459800914931 459800940661 459800914091 459800985521	1.8	2.5	1	1	2 ½	2 .0
CRC RACK - IMR CIRS S1 (Dell T7600) CIRS S2 (Dell T7600)	459800444991 459800320521 459800320531	1.33 0.9	1.84 2.00	1.0 0	1	2 ½	2.0
CRC RACK - IMR CIRS S1 (HP z840) CIRS S2 (HP z840)	459800444991 459800912731 459800914211	1.8	2.5	1	1	2 ½	2.0
HOST RACK - IMR Common Host Computer (CRC) (Dell T3600) Common Host Computer (CRC) (HP z440)	459800444981 459800398501 459800918411	1.8	2.5	1	1	2 ½	2 .0
COMPRESSOR-JUN AIR 50/60 HZ CABINET COMPRESSOR- JUN AIR 50/60 HZ	459800191992 459800882781	1.8	2.5	1	1	2 ½	2 .0
Emerson CT-3000VA-230V UPS	459800306432	1.44 1.125	2.0 2.5	1 0	1	2 ½	2 .0

UUT- 1 LCC CRC RACK DVI

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 455012005711; Common Host: 459800398501; CIRS: 459800320481
DESCRIPTION:	LCC CRC RACK DVI (enclosure) w/ • Common Host Computer (Dell T3600 E5-1620 3.6GHz no-TPM) • iCT Computer (CIRS, Dell T7600 2.3Ghz 6 Drive, SN5BP, ACQ4e, GPU) Test specimen included seismic enhancements which are part of an option kit available for this component. The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap bolts to aluminum interface plate.

PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Front-Axis	Side-Axis	Vertical-Axis
24.0	35.5	29.9	300	6.5	6.3	19.9

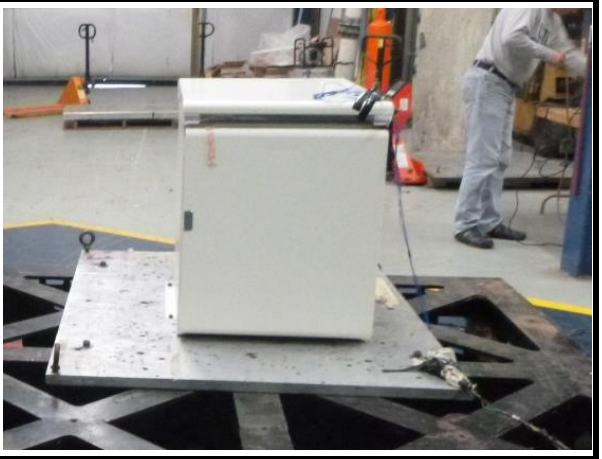
SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- 2 CRC RACK IMR

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 459800444991; iCT IMR S1: 459800320521; iCT IMR S2: 459800320531
DESCRIPTION:	CRC RACK IMR (enclosure) including: • iCT IMR S1 (CIRS, Dell T7600 2.9GHz 6 Drive GPU, SN5BP, ACQ4e) • iCT IMR S2 (CIRS, Dell T7600 2. 9GHz GPU, SN5BP) Test specimen included seismic enhancements which are part of an option kit available for this component. The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap bolts to aluminum interface plate.



PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Front-Axis	Side-Axis	Vertical-Axis
24.0	35.5	29.9	310	7.6	6.7	16.6

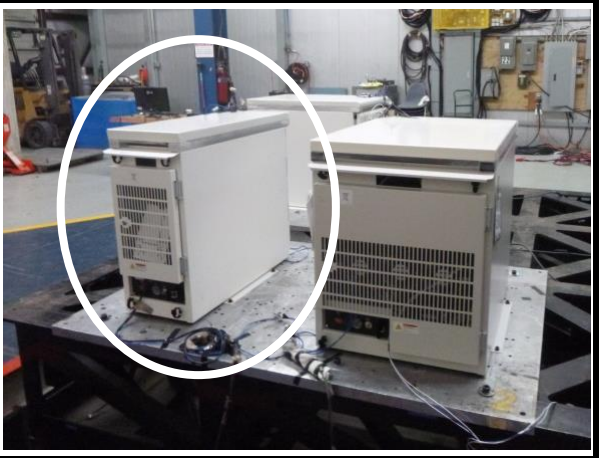
SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	1.84 2.00	1 0	1.5	2.94 2.00	2.21 0.80	1.23 1.34	0.50 0.54

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- 3 Host Rack - IMR

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 459800444981; Common Host: 459800398501
DESCRIPTION:	Host Rack - IMR including: Common Host Computer (Dell T3600 E5-1620 3.6GHz no-TPM) Test specimen included seismic enhancements which are part of an option kit available for this component. The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap bolts to aluminum interface plate.



PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Front-Axis	Side-Axis	Vertical-Axis
13.0	35.3	29.9	169	17.4	7.5	29.7

SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- A1 CRC RACK IMR

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 459800444991 Rev C; CIRS S1: 459800912731; CIRS S2: 459800914211
DESCRIPTION:	CRC RACK IMR including: • CIRS S1 (CIRS, HP z840 E5-2630v3 4Drv, SN5BP, ACQ4e) • CIRS S2 (CIRS, HP z840 E5-2630v3 No Raid, SN5BP) • Gen 5.X Console Seismic Kit (REF: 4598 008 81561) The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap screws to aluminum interface plate.

PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
24.0	35.5	29.9	316	8.1	6.6	9.2

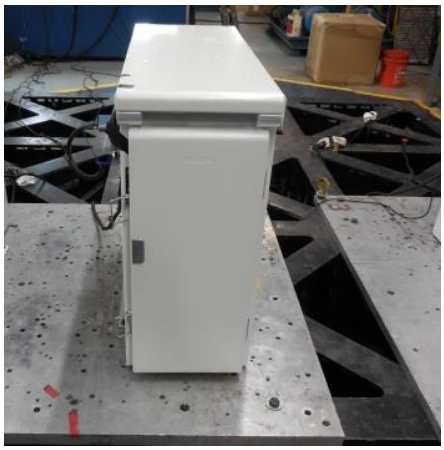
SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- A2 Host Rack - IMR

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 459800444981 Rev D; Common Host: 459800918411
DESCRIPTION:	Host Rack - IMR including: • Common Host Computer (CRC) (Host HP z440, CAN, Adaptor) • Gen 5.X Console Seismic Kit (REF: 4598 008 81561) The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap screws to aluminum interface plate.



PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
13.0	35.3	29.9	172	8.3	3.9	25.1

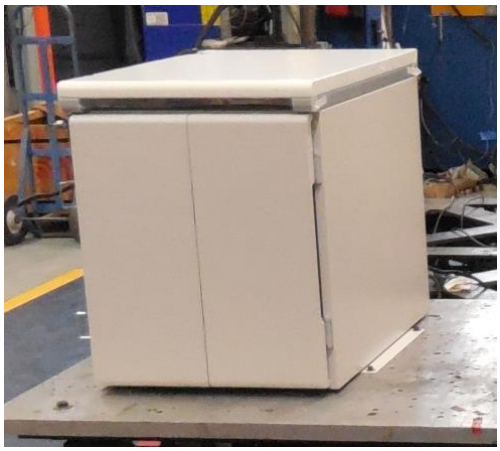
SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- A3 LCC CRC RACK DVI

MANUFACTURER:	Philips Healthcare
IDENTIFICATION:	Rack: 455012005711 Rev B; (CRC): 459800918411; CIRS: 459800914091
DESCRIPTION:	LCC CRC RACK DVI consist of : • Common Host Computer (CRC) (Host, HP z440, CAN, Adaptor) • CIRS Computer (CIRS, HP z840 E5-2620v3 4Drv, SN5BP, ACQ4e) • Gen 5.X Console Seismic Kit (REF: 4598 008 81561) The Test Specimen was fully populated at time of test.
MOUNTING:	Floor mounted using (4) -3/8" dia. Allen head cap screws to aluminum interface plate.



PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Front-Axis	Side-Axis	Vertical-Axis
24.0	35.5	29.9	307	9.4	5.6	20.8

SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- A5 COMPRESSOR-JUN AIR 50/60 HZ

MANUFACTURER: Jun-Air

IDENTIFICATION: 459800191992

DESCRIPTION: Casters removed to allow anchorage of unit to fixture.

MOUNTING: Floor mounted using (4) -1/2" diam. grade 8 hex bolts to aluminum interface plate.

PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
21.42	28.86	30.75	200	21.9	10.6	15.6

SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

UUT- A6 CABINET COMPRESSOR- JUN AIR 50/60 HZ

MANUFACTURER: Jun-Air

IDENTIFICATION: 459800882781

DESCRIPTION: Test specimen included seismic enhancements which are represented in Philips seismic kit P/N 459801067821.

The Test Specimen was fully populated at time of test.

MOUNTING: Floor mounted using (4) -3/8" dia. Allen head cap screws to aluminum interface plate.

PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
24.3	26	33.7	290	6.1	6.3	29.9

SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.

ATTACHMENT 2: TEST SPECIMEN SUMMARY

UUT- B1	**3kVA-230V AC UPS**
MANUFACTURER:	Emerson Network Power Co. Ltd
IDENTIFICATION:	Part No.: 459800306392
DESCRIPTION:	Emerson 3kVA-230V AC UPS (CT-3000VA-230V) Emerson Battery Pack (GXT3-72VBATT) Seismic Mount Kit
MOUNTING:	Rigid Base (Floor) Mounted using (4) – 3/8" dia GR 8 bolts & Philips Healthcare Ingenuity/Big Bore Seismic Kit (P/N 459800140171)

PROPERTIES:

DIMENSIONS (in.)				LOWEST RESONANT FREQUENCY (Hz.)		
Width	Depth	Height	Weight (lb.)	Side-Axis	Front-Axis	Vertical-Axis
6.75	23.7	16.9	150	5.8	24.1	>50

SHAKE TABLE TEST PARAMETERS

CODE	TEST CRITERIA	S_{DS} (g)	z/h	I_P	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20 2.50	2.40 1.00	1.34 1.68	0.54 0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.