APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0765

HCAI Special Seismic Certification Preapproval (OSP)

Type: [X] New [ ] Renewal

Manufacturer Information

Manufacturer: Shanghai United Imaging Healthcare Co., Ltd.

Manufacturer's Technical Representative: Xin GAO

Mailing Address: 2258 Chengbei Rd., Jiading District, Shanghai, 201807

Telephone: +86 (21) 67076888 Email: xin.gao@united-imaging.com

Product Information

Product Name: CT Systems

Product Type: NA

Product Model Number: ATLAS CT System

General Description: Multiple component system used for producing Computed Tomography (CT) medical images for diagnostic results.

Mounting Description: Rigid, Floor Mounted

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: WE Gundy & Associates, Inc

Contact Person: Travis Soppe

Mailing Address: PO Box 9121, Boise, ID 83707

Telephone: (208) 342-5989 Email: tsoppe@wegai.com

Title: President

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

Company Name: W.E. GUNDY & ASOCIATES INC.

Name: Travis Soppe California License Number: S6115

Mailing Address: P.O. Box 9121, Boise, ID 83707

Telephone: (208) 342-5989 Email: tsoppe@wegai.com

Certification Method

☐ GR-63-Core ☐ ICC-ES AC156 ☒ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: SUZHOU ELECTRICAL APPARATUS SCIENCE RESEARCH INSTITUTE CO., LTD. (EETI)

Contact Person: Tangfu Ji

Mailing Address: No. 5, Yuexi Qianzhu Road, Wuzhong District, Suzhou, 215104 Jiangsu, CHINA

Telephone: 86 (512) 69552195 Email: eeti-kz@eeti.cn

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = See Attachments

S_{DS} (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1.0) and 2.50 (z/h = 0.0)

a_p (Amplification factor) = See attachments

R_p (Response modification factor) = See attachments

Ω_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

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - **Approval Expires on 09/20/2029**

Date: 9/20/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

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

Condition of Approval (if applicable):

Table 1	UNITED IMAGING HEALTHCARE Co., Ltd SPECIAL SEISMIC CERTIFICATION CERTIFIED SYSTEM AND COMPONENTS	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

System: ATLAS uCT Systems	**Manufacturer:** United Imaging Healthcare Co., Ltd

System Component[1]	United Imaging Part Number	Dimensions (in)			Weight (lb)	Mounting	UUT[3]
		Width	Length	Height			
Gantries							
uCT ATLAS	7808924	91.8	36.6	77.8	5732	floor	UUT_x-9
uCT ATLAS Ascend	78009761	91.8	36.6	77.8	5688	floor	interpolated
uCT ATLAS Astound	7809764	91.8	36.6	77.8	5600	floor	interpolated
uCT 760/780	78001101	91.7	31.5	77.8	5157	floor	UUT_y-2
Patient Table[2]							
uCT - PS2	80100042	23.6	119.9-205.8	18.9-37.4	1060	floor	UUT_y-5
uCT - PS3	78007207	23.6	120.0-205.8	18.9-37.4	1060	floor	interpolated
uCT - PS4	78008392	22.1	119.5-183.8	18.9-37.4	2095	floor	UUT_x-10
Power Supply Cabinet							
PSC - ATLAS	78004466	27.6	29.6	59.5	1390	floor	UUT_x-11

Notes:

[1] All components are manufactured by United Imaging Healthcare Co., Ltd. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component within the tested units.

[2] Patient table weights do not include 362lb simulated patient weight for UUT_y-5 and 565lbs for UUT_x-10.

[3] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
x - 1340-05 - Sept 2022 / y - 1340-01 - Nov 2019

SEISMIC CERTIFICATION LIMITS

System Component	Code	S_{DS} (g)	z / h	I_P	a_P	R_P	Ω_0	F_P / W_P
CT Gantries	CBC 2022	2.0	1.0	1.50	1.0	1.5	1.5	2.40
Patient Tables	CBC 2022	2.0	1.0	1.50	1.0	1.5	1.5	2.40
Power Supply Cabinets	CBC 2022	2.0	1.0	1.50	2.5	6.0	2.0	1.50

Table 1	UNITED IMAGING HEALTHCARE Co., Ltd SPECIAL SEISMIC CERTIFICATION CERTIFIED SYSTEM AND COMPONENTS	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

System: ATLAS uCT Systems | **Manufacturer:** United Imaging Healthcare Co., Ltd

System Component[1]	United Imaging Part Number	Dimensions (in)			Weight (lb)	Mounting	UUT[3]
		Width	Length	Height			
Reconstruction System							
RSC - ATLAS	18023946	23.6	39.4	49.2	396	floor	UUT_x-12
Imaging Systems (Cabinet / Internally Mounted PC)[4]							
PC Cabinet PC2 - uCT / uMI	18022538 60004342	34.2 7.0	30.3 19.0	35.8 18.6	174 37	floor	UUT_y-10
PC Cabinet PC1 - uCT	18022537 60003853	27.9 7.0	26.7 17.2	27.2 20.5	176 44	floor	UUT_y-9
PC Cabinet PC1 - ATLAS	18022536 60009576	36.2 7.0	34.6 17.2	32.4 20.5	276 37	floor	interpolated
PC Cabinet PC3 - uCT / uMI	18022536 80504016	36.2 7.0	34.6 17.8	32.4 25.5	276 56	floor	UUT_y-11

Notes:

[1] All components are manufactured by United Imaging Healthcare Co., Ltd. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component within the tested units.

[2] Patient table weights do not include 362lb simulated patient weight for UUT_y-5 and 565lbs for UUT_x-10.

[3] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
x - 1340-05 - Sept 2022 / y - 1340-01-R1 - Nov 2019

[4] PCs are installed in any of three cabinets (see model numbers below and dimensions / weights above) by United Imaging Healthcare.
18022536 / 18022537 / 18022538

SEISMIC CERTIFICATION LIMITS

System Component	Code	S_{DS} (g)	z / h	I_P	a_P	R_P	Ω_0	F_P / W_P
Reconstruction System	CBC 2022	2.0	1.0	1.50	2.5	6.0	2.0	1.50
PC / User Interface	CBC 2022	2.0	1.0	1.50	2.5	6.0	2.0	1.50

UUT_x-9	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Rigid floor mounted with (8) M12 grade 8.8 bolts

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: uCT ATLAS	**Test Date:** September 2022
Model Number: 7808924	**Report Number:** 1340-05
UUT Function: Continuous rotating x-ray to generate diagnostic imaging	
UUT Description: Gantry for the ATLAS uCT systems.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
5,732	91.8	36.6	77.8	8.5	14.5	28.5

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-2	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Rigid floor mounted with (4) M16 grade 12.9 bolts

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: uCT 760/780 CT Gantry	**Test Date:** November 2019
Model Number: 78001101	**Report Number:** 1340-01
UUT Function: Continuous rotating x-ray to generate diagnostic imaging	
UUT Description: Component of the uCT 760/780 CT system	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
5,157	31.5	91.7	77.8	9.5	6.0	23.5

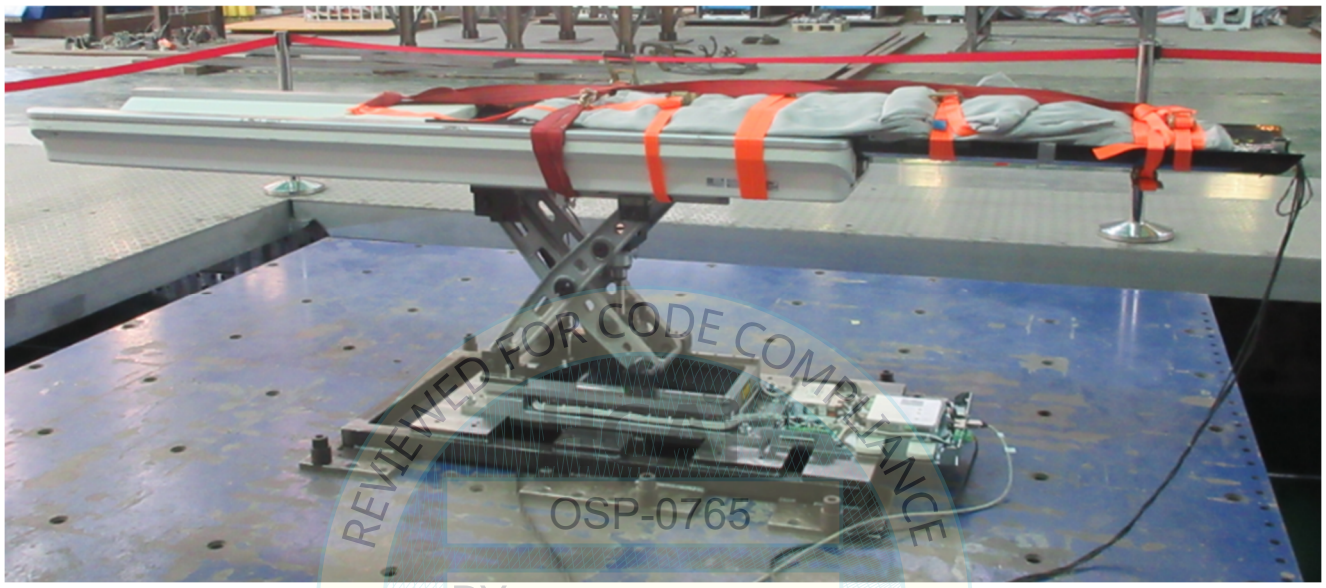
SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-5	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Rigid floor mounted with (4) M12 grade 12.9 bolts



Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: uCT – PS2	**Test Date:** September 2019
Model Number: 80100042	**Report Number:** 1340-01
UUT Function: Motorized patient support	
UUT Description: Component of the uCT CT systems	

UUT PROPERTIES

Weight (lb) with Patient	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,422	23.6	161.6	37.4	8.0	9.0	8.5

The patient table moves vertically / horizontally to accommodate different positions and procedures. The system was tested in the normal operating position, the table extended 41.7", at the maximum height, and a total simulated patient weight of 362lbs.

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_x-10	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Rigid floor mounted with (12) M12 grade 8.8 bolts

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: uCT PS4	**Test Date:** September 2022
Model Number: 78008392	**Report Number:** 1340-05
UUT Function: Motorized patient support	
UUT Description: Patient support for the ATLAS uCT systems.	

UUT PROPERTIES

Weight (lb) with Patient	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
2,660	22.1	169.3	37.4	3.5	4.5	7.0

The patient table moves vertically / horizontally to accommodate different positions and procedures. The system was tested in the normal operating position, with the table extended 49.8", at the maximum height, and a total simulated patient weight of 565lbs.

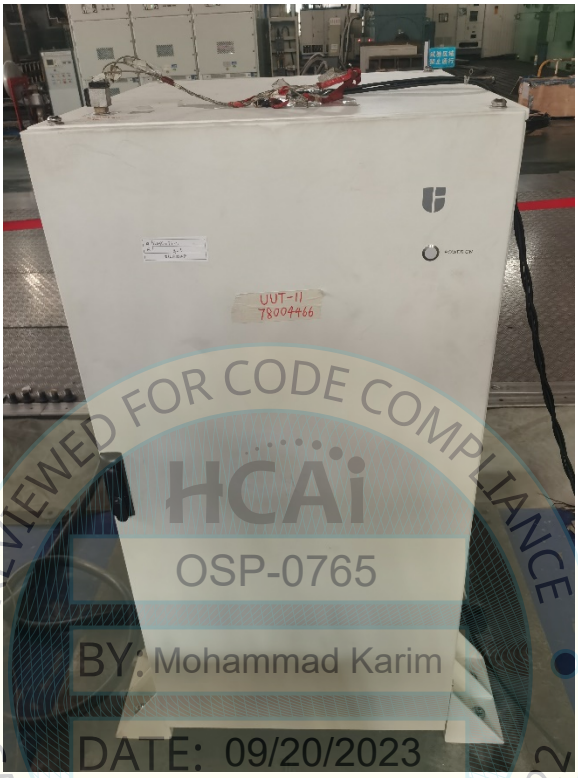
SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_x-11	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Rigid floor mounted with (8) M12 grade 12.9 bolts thru United Imaging seismic anchorage brackets.



Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: PCS - ATLAS	**Test Date:** September 2022
Model Number: 78004466	**Report Number:** 1340-05
UUT Function: Power Supply Cabinet	
UUT Description: Power supply for the ATLAS uCT systems.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,390	27.6	29.6	59.5	15.0	15.0	18.5

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_x-12	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Rigid floor mounted with (4) M12 grade 12.9 bolts thru (2) 3mm thick United Imaging U brackets mounted to the cabinet with (2) M12 screws per bracket.

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: RSC - ATLAS	**Test Date:** September 2022
Model Number: 18023946	**Report Number:** 1340-05
UUT Function: Image reconstruction system	
UUT Description:	Image reconstruction system cabinet for the ATLAS uCT systems. The cabinet housed two PCs used for image reconstruction with model numbers 60005332 and 60009013.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
396	23.6	39.4	49.2	15.0	6.5	23.0

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-9	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Cabinet is Rigid floor mounted with (4) M12 grade 12.9 bolts thru United Imaging seismic anchorage brackets (18042254). Internal PC mounts to the cabinet with United Imaging seismic restraint brackets (18042256).

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: PC Cabinet / Internal PC1 – uCT	**Test Date:** November 2019
Model Number: 18022537 / 60003853	**Report Number:** 1340-01
UUT Function: Imaging System PC	
UUT Description: Component of the uCT CT systems.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
176	27.9	26.7	27.2	>33.0	16.0	22.5
44	7.0	20.5	17.2	NA	NA	NA

Note: The first line above details the UUT Properties for the PC Cabinet and the second line details the UUT properties for the internally mounted PC.

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-10	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Cabinet is Rigid floor mounted with (4) M12 grade 12.9 bolts thru United Imaging seismic anchorage brackets (18042255). Internal PC mounts to the cabinet with United Imaging seismic restraint brackets (18042256).

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: PC Cabinet / PC2 – uCT / uMI	**Test Date:** November 2019
Model Number: 18022538 / 60004342	**Report Number:** 1340-01
UUT Function: Imaging System PC	
UUT Description: Component of the uCT and uMI CT systems.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
174	34.2	30.3	35.8	>33.0	12.0	>33.0
37	7.0	19.0	18.6	NA	NA	NA

Note: The first line above details the UUT Properties for the PC Cabinet and the second line details the UUT properties for the internally mounted PC.

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-11	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Cabinet is Rigid floor mounted with (4) M12 grade 12.9 bolts thru United Imaging seismic anchorage brackets (18042255). Internal PC mounts to the cabinet with United Imaging seismic restraint brackets (18042256).

Manufacturer: United Imaging Healthcare	**Test Location:** EETI (Suzhou, CHINA)
Component: PC Cabinet / PC3 – uCT / uMI	**Test Date:** November 2019
Model Number: 18022536 / 80504016	**Report Number:** 1340-01
UUT Function: Imaging System PC	
UUT Description: Component of the uCT and uMI CT systems.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
276	36.2	34.6	32.4	13.0	9.5	17.0
56	7.0	17.8	25.5	NA	NA	NA

Note: The first line above details the UUT Properties for the PC Cabinet and the second line details the UUT properties for the internally mounted PC.

SEISMIC TEST PARAMETERS

Building 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 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.