APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0640

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Vertiv Corporation

Manufacturer's Technical Representative: Julian Freeman

Mailing Address: 975 Pittsburgh Drive, Delaware, OH 43015

Telephone: (740) 833-8910 Email: julian.freeman@vertiv.com

Product Information

Product Name: Varies (See attachment)

Product Model Number(s): Varies (See attachment)

Product Category: UPS and Batteries

Product Sub-Category: UPS

General Description: UPS Cabinets

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: Pre Compliance

Contact Person: Galen Reid

Mailing Address: 324 NW Hill St., Bend, OR 97703

Telephone: (541) 241-2310 Email: galen@go-pre.com

Title: Principal and Program Manager

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

Company Name: PRE COMPLIANCE

Name: Andrew Coughlin California License Number: S6082

Mailing Address: 324 NW Hill St, Bend, OR 97703

Telephone: (415) 635-8461 Email: Andy@go-pre.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: Jeremy@etldallas.com

Company Name: UNIVERSITY OF NEVADA, RENO (UNR)

Contact Person: Patrick LaPlace

Mailing Address: 1664 N. Virginia Street, Reno NV 89557

Telephone: (775) 784-6937 Email: laplace@unr.edu

Seismic Parameters

Certified Response Spectral Acceleration Factors:(F_p/W_p)

Horizontal	(A Flx-H), g=	2.48	(A Rig-H), g=	1.66
Vertical	(A Flx-V), g=	1.50	(A Rig-V), g=	0.60

S_{DS} (Design spectral response acceleration at short period, g) = 1.55 (z/h = 1), 2.25 (z/h = 0)

Hf (Force amplification height factor) = 1 @ z/h = 0; 3.5 @ z/h = 1

Ru (Structure ductility redution factor) = 1 @ z/h = 0; 1.3 @ z/h = 1

I_p (Importance factor) = 1.5

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

HCAI Approval (For Office Use Only) **- Approval Expires on 11/03/2031**

Date: 11/3/2025

Name: Mohammad Karim Title: Supervisor, Health Facilities

Condition of Approval (if applicable):

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENTS

Manufacturer: Vertiv Corporation
Product Type: UPS
Model Line: EXS

Seismic Parameters		Building Codes
S_{DS} = 1.55g for R_μ=1.3, H_f=3.5 S_{DS} = 2.25g for R_μ=1.0, H_f=1.0	I_p=1.5	CBC 2025

TABLE 1

Mounting Configuration: Rigid Base Mounted (Standalone)

Construction Summary

Carbon Steel Frame and Skins

Options Summary

10, 15, 20, and 30 kVA/kW
208/220V Three Phase Power

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
EXS Frame 1 10 kVA	53S10AC1AXXXXX	25.6	13.2	51.2	437	1 Battery String	Extrap.
	...	...	...	...	...		Extrap.
	53S10EC2A0B0052	25.6	13.2	51.2	628	2 Battery Strings	1
EXS Frame 1S with Extended Battery 10 kVA	53S10AC3AXXXXX	25.6	22.7	51.2	893	3 Battery Strings	Interp.
	...	...	...	...	...		Interp.
	53S10FC4A0A0052	25.6	22.7	51.2	1129	4 Battery Strings	2
EXS Frame 2 15-20 kVA	53S15GC2B0XXXX	29.5	17.3	63	734	Identical to EXS 20kVA, Software	Interp.
	53S15AG3AXXXXX	29.5	17.3	63	888		Interp.
	53S15GC4AXXXXX	29.5	17.3	63	1042		Interp.
	53S20GC6A0000CB	29.5	17.3	63	768	2 Battery Strings	3
	53S20GCXAXXXXXX	29.5	17.3	63	888		Interp.
	53S20GC8A0C00CO	29.5	17.3	63	1125	4 Battery Strings	4
	53S20GC8A0M00CO	29.5	17.3	63	1135	4 Battery Strings	9
EXS Frame 3 30 kVA	53S30HCERXXXXXX	23.6	33.5	63	1162	1 Battery String	Interp.
	53S30HCFR000CST	23.6	33.5	63	1080	2 Battery Strings	5
EBC Frame 3	53BP30H11L1	23.6	33.5	63	870	1 Battery String	7
	53BP30H12L1	23.6	33.5	63	1376	2 Battery Strings	6

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENTS

Manufacturer: Vertiv Corporation
Product Type: UPS
Model Line: EXS

Seismic Parameters		Building Codes
S_{DS} = 1.55g for R_μ=1.3, H_f=3.5 S_{DS} = 2.25g for R_μ=1.0, H_f=1.0	I_p=1.5	CBC 2025

TABLE 2

Mounting Configuration: Rigid Base Mounted (Ganged[1])

Construction Summary	Options Summary
Carbon Steel Frame and Skins	30 kVA/kW 208/220V Three Phase Power

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
EXS Frame 3 30 kVA	53S30HCERXXXXXX	23.6	33.5	63	1162	1 Battery String	Extrap.
	53S30HCFR000CST	23.6	33.5	63	1080	2 Battery Strings	8
EBC Frame 3	53BP30H11L1	23.6	33.5	63	870	1 Battery String	Extrap.
	53BP30H12L1	23.6	33.5	63	1376	2 Battery Strings, 1344.5 lbs[2]	8

Notes:
1. UUT5 was ganged to an EBC Frame 3 Battery Cabinet (2 String) to create UUT8
2. EBC Frame 3 ganged battery cabinet weighs less than identical standalone due to right panel being removed to attach the unit to a UPS

SPECIAL SEISMIC CERTIFICATION NOMENCLAURE

Manufacturer: Vertiv Corporation
Product Type: UPS
Model Line: EXS

Seismic Parameters		Building Codes
S_{DS} = 1.55g for R_μ=1.3, H_f=3.5 S_{DS} = 2.25g for R_μ=1.0, H_f=1.0	I_p=1.5	CBC 2025

TABLE 3 MODEL LINE NUMBERING

Liebert EXS UPS Model Number Nomenclature

1-2	3	4-5	6	7	8	9	10	11	12	13-14-15
Product Line	System Type	Name Plate Rating	Frame Type	Input/Output Voltage	Internal String Qty & # Jars/String	Internal Battery Model Code	Factory Installed Communications Cards (Slot 1/2) Note: red text combinations are only applicable to Frame 2 & 3	Factory Installed POD Slot 1	Factory Installed POD Slot 2 Note: red text combinations are only applicable to Frame 2 & 3	Config Digits
53 - Liebert EXS	S - Single	10 - 10 kVA/kW	A - 335 mm (Frame 1), 10kA withstand	C - 208/120-208/120	0 - None	0 - No Battery	0 - IS-UNITY-LIFE / None	0 - None	0 - None	xxx
	P - Parallel	15 - 15 kVA/kW	B - 570 mm (Frame 1 + Sidecar), 10kA withstand	Y - 220/127-220/127	1 - 1 String - 32 Jars	A - CSB HRL1234WF2FR	1 - IS-UNITY-SNMP / None	A - (2) L21-20R [PD3-001]	A - (2) L21-20R [PD3-001]	
		20 - 20 kVA/kW	E - 335 mm (Frame 1), 30kA withstand		2 - 2 Strings - 32 Jars	R - CSB HRL12150WFR	2 - IS-UNITY-DP / None	B - (6) L6-30R [PD3-002]	B - (6) L6-30R [PD3-002]	
		30 - 30 kVA/kW	F - 570 mm (Frame 1 + Sidecar), 30kA withstand		3 - 3 Strings - 32 Jars	T - CSB HRL12200WFR	3 - IS-UNITY-LIFE / IS-RELAY	C - (6) L6-30R [PD3-003]	C - (6) L6-30R [PD3-003]	
		40 - 40 kVA/kW	G - 440 mm (Frame 2), 30kA withstand		4 - 4 Strings - 32 Jars	Va Energys 12HX-150EFR	4 - IS-UNITY-LIFE / IS-485EXI	D - (1) IEC60309 3 wire [PD3-004]	D - (1) IEC60309 3 wire [PD3-004]	
			H - 600 mm (Frame 3), 30kA withstand		6 - 7 Strings - 28 Jars	Va Energys 12HX-206FR	5 - IS-UNITY-SNMP / IS-RELAY	E - (6) L5-20R [PD3-005]	E - (6) L5-20R [PD3-005]	
			J - 600 mm (Frame 3), 30kA withstand		7 - 3 Strings - 28 Jars		6 - IS-UNITY-SNMP / IS-485EXI	F - (6) L6-20R [PD3-006]	F - (6) L6-20R [PD3-006]	
			K- 600 mm (Frame 3), 30kA withstand, with Top Fan Mount		8 - 4 Strings - 28 Jars		7 - IS-UNITY-DP / IS-RELAY	G - (2) C13-30R [PD3-007]	G - (2) C13-30R [PD3-007]	
					E - 1 String - 20 Jars		8 - IS-UNITY-DP / IS-485EXI	H - (1) C19/14C [PD3-008]	H - (1) C19/14C [PD3-008]	
					F - 2 Strings - 20 Jars		A - IS-UNITY-DP / IS-UNITYDP	J - (2) L21-20R [PD3-009]	J - (2) L21-20R [PD3-009]	
					G - 3 Strings - 30 Jars		B - IS-UNITY-DP / IS-UNITY-SNMP	K - (2) L15-30R [PD3-010]	K - (2) L15-30R [PD3-010]	
					H - 4 Strings - 20 Jars		C - IS-UNITY-SNMP / IS-UNITY-SNMP	L - (1) IEC60309 4-wire [PD3-011]	L - (1) IEC60309 4-wire [PD3-011]	
							D - IS-485EXI / None	M - (1) Hardwire TB - 4 Wire + GND Input / 4 Wire + GND Output [PD3-100]	M - (1) Hardwire TB - 4 Wire + GND Input / 4 Wire + GND Output [PD3-100]	
							E - IS-485EXI / IS-RELAY	1 - (2) L6-30R, (6) 5-15/20R [PD2-101]	1 - (2) L6-30R, (6) 5-15/20R [PD2-101]	
								2 - (4) L6-20R, (4) 5-15/20R [PD2-102]	2 - (4) L6-20R, (4) 5-15/20R [PD2-102]	
								3 - (4) L6-30R, (4) 5-15/20R [PD2-103]	3 - (4) L6-30R, (4) 5-15/20R [PD2-103]	
								4 - (2) L6-30R, (2) L6-20R, (4) 5-15/20R [PD2-104]	4 - (2) L6-30R, (2) L6-20R, (4) 5-15/20R [PD2-104]	
								5 - (2) L5-20R, (2) L5-20R, (4) 5-15/20R [PD2-105]	5 - (2) L5-20R, (2) L5-20R, (4) 5-15/20R [PD2-105]	
								6 - (4) L6-20R, (4) L5-20R [PD2-106]	6 - (4) L6-20R, (4) L6-20R [PD2-106]	
								7 - (4) L5-20R, (4) 5-15/20R [PD2-107]	7 - (4) L5-20R, (4) 5-15/20R [PD2-107]	
								8 - (2) L6-30R, (2) L6-20R [PD2-108]	8 - (2) L6-30R, (2) L6-20R [PD2-108]	
								9 - (2) L15-30R [PD2-109]	9 - (2) L15-30R [PD2-109]	
								W - (4) IEC320-C19, (4) IEC320-C13 [PD2-200]	W - (4) IEC320-C19, (4) IEC320-C13 [PD2-200]	
								X - (3) IEC320-C19, (6) IEC320-C13 [PD2-201]	X - (3) IEC320-C19, (6) IEC320-C13 [PD2-201]	
								Y - (12) IEC320-C13 [PD2-202]	Y - (12) IEC320-C13 [PD2-202]	
								Z - (2) IEC320-32A, (4) IEC320-C13 [PD2-204]	Z - (2) IEC320-32A, (4) IEC320-C13 [PD2-204]	

1. Communication card code 3 is standard for the Liebert EXS 10 kVA Model
2. Communication card codes A, B, and C are only available in Liebert EXS Frames 2 & 3 (15-30 kVA)
3. Distribution Slot #2 is only available on the Liebert EXS Frame 2 & 3 (15-30 kVA)

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENTS

Manufacturer: Vertiv Corporation
Product Type: UPS
Model Line: EXS

Seismic Parameters		Building Codes
S_{DS} = 1.55g for R_μ=1.3, H_f=3.5 S_{DS} = 2.25g for R_μ=1.0, H_f=1.0	I_p=1.5	CBC 2025

TABLE 4

Table Description: Electrical Components

Component (Manufacturer)	Model	Dimensions (in)			Wt. (lb)	Material	UUT
		D	W	H			
Battery (CSB)	HRL123W-F2FR	2.6	6.0	3.7	6	Lead Acid	1,2,3,4,5,9
	HRL12150W-FR	7.7	5.12	6.8	26.5	Lead Acid	6,7,8
Battery (Data Safe)	12HX150	7.68	5.12	6.46	22.5	Lead Acid	8
Bypass/ Maintenance Isolation Breaker (ABB)	S203-C40	2.1	2.7	3.5	0.8	Plastic	1,2,3
Maintenance Bypass Breaker (ABB)	S203-C50	2.1	2.7	3.5	0.8	Plastic	1,2,3
Rectifier input Breaker (ABB)	S204-C40	2.8	2.7	3.5	1.1	Plastic	1,2,3
Breaker (Nader)	NDM1-125C80/3	2.8	2.7	3.5	1.2	Plastic	4,5,9
	NDM1-125C125/3	2.8	2.7	3.5	1.2	Plastic	8
Breaker (Siemens)	3VA5217-5EC31-0AA0	4.2	4.1	7.3	4.5	Plastic	6,7,8
Communication Cards (Liebert)	IS-UNITY-LIFE		3.0	1.5	0.44	Carbon Steel and Plastic	1,2
	IS-UNITY-SNMP		3.0	1.5	0.44		3
	IS-UNITY-DP		3.0	1.5	0.44		4,9
	IS-RELAY		3.0	1.5	0.44		5,6
	IS-485EXI		3.0	1.5	0.44		5,6

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENTS

Manufacturer: Vertiv Corporation
Product Type: UPS
Model Line: EXS

Seismic Parameters		Building Codes
S_{DS} = 1.55g for R_μ=1.3, H_f=3.5 S_{DS} = 2.25g for R_μ=1.0, H_f=1.0	I_p=1.5	CBC 2025

TABLE 5

Table Description: Power Output Distribution (PODS)

Component (Manufacturer)	Model	Dimensions (in)			Wt. (lb)	Material	Notes	UUT
		D	W	H				
Power Output Distribution (Vertiv)	PD3-001		7.4	5.7	4.4	Carbon Steel and Plastic	(2) L21-30R	2
	PD3-002		7.4	5.7	6.6		(6) L6-30R	1
	PD3-003		7.4	5.7	6.6		(6) L5-30R	4
	PD3-004		7.4	5.7	4.4		(1) IEC60309 - 60A (4W+G)	Interp.
	PD3-005		7.4	5.7	6.6		(6) L5-20R	Interp.
	PD3-006		7.4	5.7	6.6		(6) L6-20R	Interp.
	PD3-007		7.4	5.7	4.4		(2) L15-30R	Interp.
	PD3-008		7.4	5.7	4.4		(1) CS8364C- 60A	Interp.
	PD3-009		7.4	5.7	4.4		(2) L21-20R	Interp.
	PD3-010		7.4	5.7	4.4		(2) L15-20R	Interp.
	PD3-011		7.4	5.7	4.4		(1) IEC60309 - 60A (3W+G)	Interp.
	PD3-100	4.9	16.7	12.7	17			9

SPECIAL SEISMIC CERTIFICATION TESTING SUMMARY

UUT	Model Description	Test Report	Testing Lab	Test Date	S_{DS}	R_μ	H_f	I_p
1	EXS Frame 1 (10 kVA)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
2	EXS Frame 1S (10 kVA w/Battery)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
3	EXS Frame 2 (20 kVA)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
4	EXS Frame 2 (20 kVA)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
5	EXS Frame 3 - 30 kVA (2 String)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
6	EBC Frame 3 (2 String)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
7	EBC Frame 3 (1 String)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
8	EBC Frame 3 - EXS Frame 3 (Ganged - 4 String)	15392, Rev.3	ETL	8/5/2019	1.55 2.25	1.3 1.0	3.5 1.0	1.5
9	EXS Frame 2 - 20 kVA (4 String)	TR251751-01-R0 (UUT1)	UNR	9/11/2025	1.55 2.25	1.3 1.0	3.5 1.0	1.5

Notes:

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 1

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S10EC2A0B0052
Serial Number: M19GBE0002
Description: 10kVA Frame 1 UPS

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
25.6	13.2	51.2	628

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
13.8	10.6	22.5

Building Codes

CBC 2025

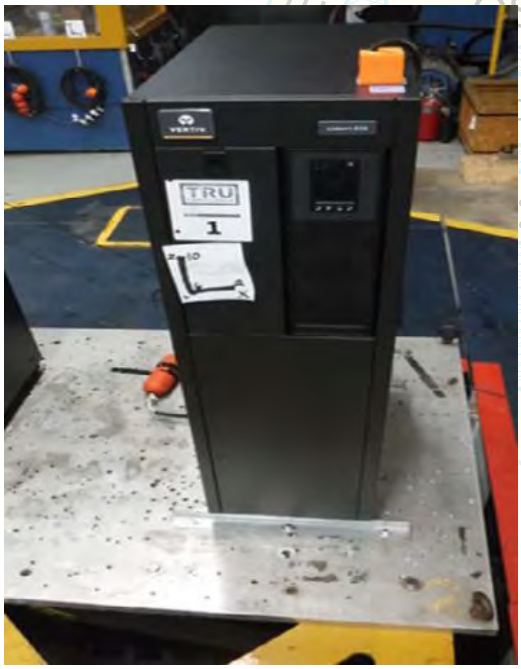
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
2 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:610267P1) and were attached to the unit using (2) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (ABB)	S203-C40
Circuit Breaker (ABB)	S203-C50
Circuit Breaker (ABB)	S204-C40
Communication Card (Liebert)	IS-UNITY-LIFE
POD (Vertiv)	PD3-002

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 2

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S10FC4A0A0052
Serial Number: M19GBE0003
Description: 10kVA Frame 1S w/extended battery

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
25.6	22.7	51.2	1129

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
8.6	11.0	28.4

Building Codes

CBC 2025

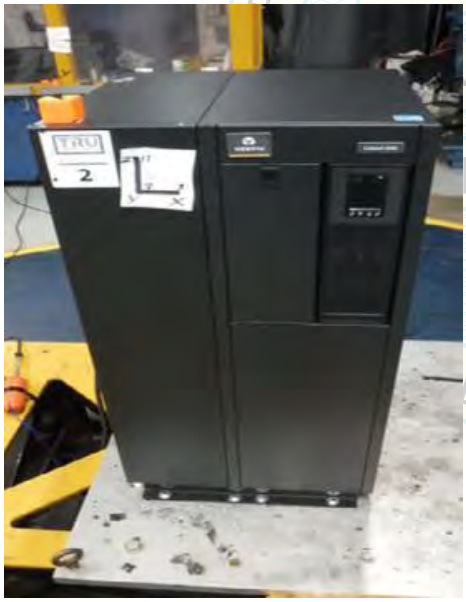
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
4 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:660130P1 & 660130P2) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (4) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (ABB)	S203-C40
Circuit Breaker (ABB)	S203-C50
Circuit Breaker (ABB)	S204-C40
Communication Card (Liebert)	IS-UNITY-LIFE
POD (Vertiv)	PD3-001

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 3

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S20GC6A0000CB
Serial Number: M19GB00002
Description: 20kVA Frame 2 UPS

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
29.5	17.3	63	768

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
11.5	5.9	>33.3

Building Codes

CBC 2025

Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
2 Battery Strings

UUT Mounting Details:

UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:610224P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (ABB)	S203-C40
Circuit Breaker (ABB)	S203-C50
Circuit Breaker (ABB)	S204-C40
Communication Card (Liebert)	IS-UNITY-SNMP
POD (Vertiv)	PD3-001

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 4

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S20GC8A0C00CO
Serial Number: M19GB00003
Description: 20kVA Frame 2 UPS

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
29.5	17.3	63	1125

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
9.1	3.8	20.0

Building Codes

CBC 2025

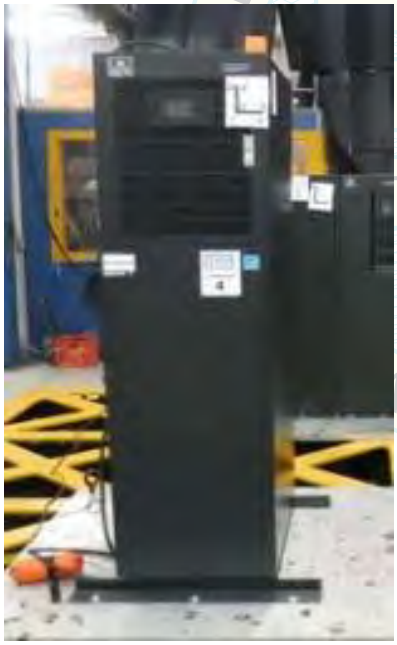
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
4 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:610224P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (Nader)	NDM1-125C80/3
Communication Card (Liebert)	IS-UNITY-DP
POD (Vertiv)	PD3-003

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 5

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S30HCFR000CST
Serial Number: M19GBE008
Description: 30kVA Frame 3 UPS

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
23.6	33.5	63	1080

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
12.0	5.5	17.2

Building Codes

CBC 2025

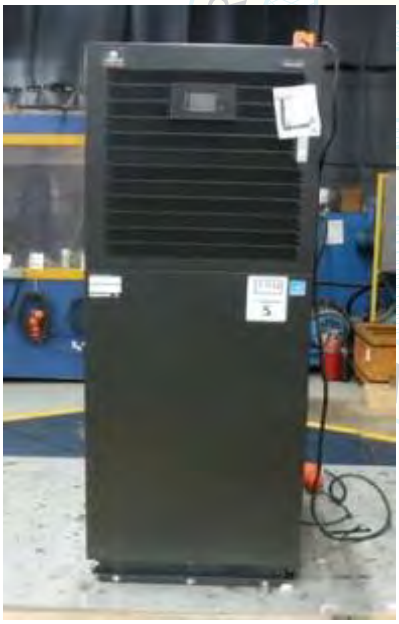
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
2 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:660124P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (Nader)	NDM1-125C80/3
Communication Card (Liebert)	IS-RELAY
Communication Card (Liebert)	IS-485EXI

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 6

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS EBC
Model Number: 53BP30H12L1
Serial Number: N/A
Description: EBC Frame 3

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
23.6	33.5	63	1376

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
11.2	6.4	22.2

Building Codes

CBC 2025

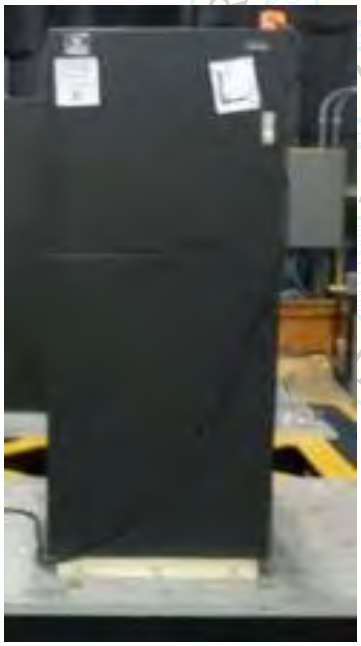
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
2 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:609885P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL12150W-FR
Circuit Breaker (Siemens)	3VA5217-5EC31-0AA0
Communication Card (Liebert)	IS-RELAY
Communication Card (Liebert)	IS-485EXI

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 7 Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS EBC
Model Number: 53BP30H11L1
Serial Number: N/A
Description: EBC Frame 3

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)
23.6	33.5	63	870

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
15.6	7.3	22.3

Building Codes

CBC 2025

Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
1 Battery String

UUT Mounting Details:

UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:609885P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL12150W-FR
Circuit Breaker (Siemens)	3VA5217-5EC31-0AA0

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 8

Test Report# 15392, Rev.3

Manufacturer: Vertiv Corporation
Model Line: EXS + EBC
Model Number: 53S30HCFR000CST + 53BP30H12L1
Serial Number: M19GBE0008 + M19GBE0007
Description: 30kVA Frame 3 UPS + EBC Frame 3

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)[1]
23.6	67	63	2957

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
7.2	4.1	17.5

Building Codes

CBC 2025

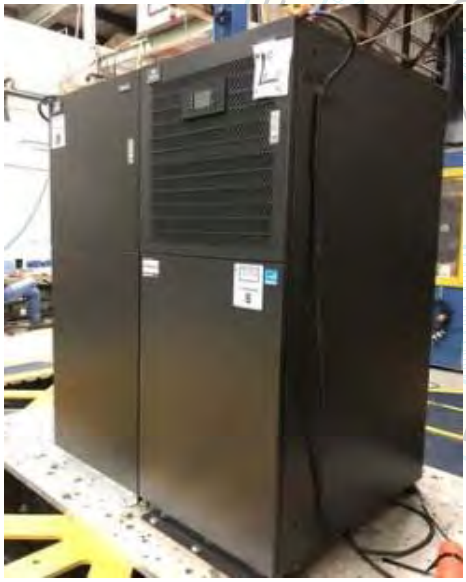
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
Ganged with 4 Battery Strings

UUT Mounting Details:



UUT cabinets were ganged together using (2) M10 bolts at front and back junction of cabinets. UUT was rigid base mounted using (4) manufacturer provided mounting brackets (Vertiv PN:609885P1 & 660124P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL12150W-FR
Batteries (Data Safe)	12HX150
Circuit Breaker (Nader)	NDM1-125C125/3
Circuit Breaker (Siemens)	3VA5217-5EC31-0AA0

[1]Weight listed is the total for ganged EXS and EBC. Individual details are as follows:

EXS Frame 3: 1,581 lbs.	
EBC Frame 3: 1,376 lbs.	

SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

UUT 9

Test Report# TR251751-01-R0 (UUT1)

Manufacturer: Vertiv Corporation
Model Line: EXS
Model Number: 53S20GC8A0M00CO
Serial Number: M25E000141
Description: 20kVA Frame 2 UPS

Highest Passed Test Level

S_{DS}	R_μ	H_f	I_p	A_{flx-h}	A_{rig-h}	A_{flx-v}	A_{rig-v}
1.55	1.3	3.5	1.5	2.48	1.66	1.50	0.60
2.25	1.0	1.0					

Dimensions/Weights

Depth (in)	Width (in)	Height (in)	Weight (lbs.)[1]
29.5	17.3	63	1135

Lowest Natural Frequency (Hz)

Front-Back	Side-Side	Vertical
8.3	3.9	19.4

Building Codes

CBC 2025

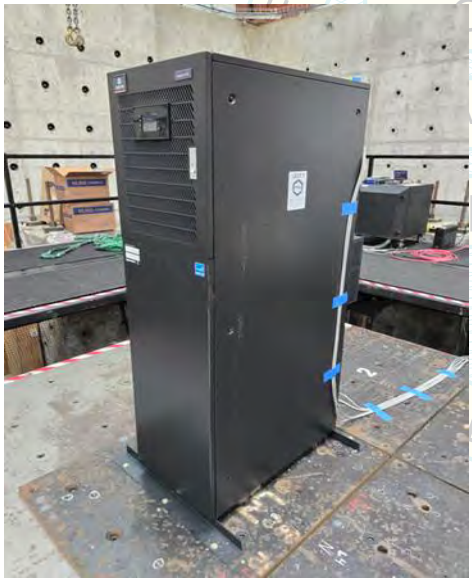
Test Criteria

ICC-ES AC156

Construction/Option Summary

Carbon Steel Frame and Skin
4 Battery Strings

UUT Mounting Details:



UUT was rigid base mounted using two manufacturer provided mounting brackets (Vertiv PN:610224P1) and were attached to the unit using (4) 3/8" Grade 5 Bolts each, and to the table using (3) 3/8" Grade 5 bolts each.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents

Description (Manufacturer)	Model #
Batteries (CSB)	HRL123W-F2FR
Circuit Breaker (Nader)	NDM1-125C80/3
Communication Card (Liebert)	IS-UNITY-DP
POD (Vertiv)	PD3-100