



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OSP – 0571 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Vertiv Corporation

Manufacturer's Technical Representative: Keith Goshia

Mailing Address: 975 Pittsburgh Drive, Delaware, OH 43015

Telephone: (740) 833- 8557

Email: keith.goshia@vertivco.com

Product Information

Product Name: Vertiv eXL S1 UPS

Product Type: Uninterruptible Power Supply (UPS)

Product Model Number: See Attachment A

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

General Description: Three phase UPS system with I/O Cabinets

Mounting Description: Base mounted - rigid

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Contact Person: Andrew M. Coughlin, SE

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 844-878-0200

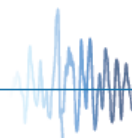
Email: acoughlin@structint.com

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: 5/29/2018

Title: Director, TRU Compliance Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

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





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Name: Andrew M. Coughlin, SE California License Number: S6082

Mailing Address: 215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 844-878-0200 Email: acoughlin@structint.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): _____

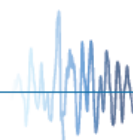
Testing Laboratory

Company Name: Pacific Earthquake Engineering Research (PEER)

Contact Name: Alex Mead

Mailing Address: 1301 South 46th St., Bldg.420, Richmond, CA 94804

Telephone: 510-642-6475 Email: peer_center@berkeley.edu





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Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 0.72 (z/h = 1); 0.64 (z/h = 0)

S_{DS} (Design spectral response acceleration at short period, g) = 1.00 (z/h = 1); 1.43 (z/h = 0)

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 (S_{DS} = 1.00g); 0 (S_{DS} = 1.43g)

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

Overall dimensions and weight (or range thereof) = See Attachment A

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) = OSP-0571-10

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = BY: Ali Sumer

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 03/20/2019

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): Attachment A

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

Signature: _____

Date: March 19, 2019

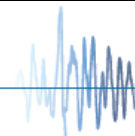
Print Name: Ali Sumer

Title: DSE

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

z/h = See Above

Condition of Approval (if applicable): _____



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

TRU PROJECT NO. 18000143

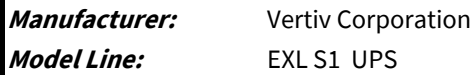


Manufacturer: Vertiv Corporation						TABLE 1	
Model Line: EXL S1 UPS							
Certified Product Construction Summary: Carbon Steel Cabinets							
Certified Options Summary: I/O Cabinets are customizable with the following options: Back Feed Disconnect (BFD), Sharing Inductor, or Common Mode Choke. I/O-1 is fitted with one of the options. I/O-2 is fitted with a combination of two of the options. I/O-3 is fitted with all three options.							
Mounting Configuration: Base mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2016		Seismic Certification Limits:				$S_{DS} = 1.00 g \quad z/h=1.0$ $S_{DS} = 1.43 g \quad z/h=0.0$	$I_p = 1.5$
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
EXL S1 UPS	625 kVA/kW UPS	38.86	55.17	79	2902		Extrap.
	750 kVA/kW UPS	38.86	55.17	79	2902		Extrap.
	800 kVA/kW UPS	38.86	55.17	79	2902		1
	1000 kVA/kW UPS	38.86	73.9	79	4667		Interp.
	1100 kVA/kW UPS	38.86	73.9	79	4667		Interp.
	1200 kVA/kW UPS	38.86	73.9	79	4667		2
EXL Input/Output Cabinet	I/O-1	38.86	23.67	79	449	Back Feed Disconnect (BFD)	1
		38.86	23.67	79	619	Sharing Inductor	Interp.
		38.86	23.67	79	978	Common Mode Choke	Interp.
	I/O-2	38.86	54.22	79	749	BFD, Sharing Inductor	Interp.
		38.86	54.22	79	1287	Sharing Inductor, Common Mode Choke	Interp.
		38.86	54.22	79	1648	BFD, Common Mode Choke	Interp.
	I/O-3	38.86	54.22	79	2266	BFD, Sharing Inductor, Common Mode Choke	2

Note: Model number identifies unique configuration

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TRU PROJECT NO. 18000143



Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 18000143



Manufacturer:	Vertiv Corporation	UUT 1
Model Line:	EXL S1 UPS	
Model Number:	52SA800ANCAA86A	
Serial Number:		D18AA60000

Product Construction Summary:
NEMA 1 Enclosure

Options/Subcomponent Summary:
800 kVA UPS with I/O-1. Tested with the following option: Back feed disconnect (BFD)

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
3,351	39	79	79	10.92	9.78	6.70				
UUT Highest Passed Seismic Run Information										
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 2016		ICC-ES AC156		1.00	1.0	1.5	1.60	1.20	0.95	0.38
				1.43	0.0	1.5				

Test Mounting Details:



UUT 1 is base mounted-rigid to the shake table with twelve (12) manufacturer supplied angles (P/N 544556P1) and twelve (12) 3/4" Grade 8 Bolts, lock washer, and flat washer.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 18000143



Manufacturer:	Vertiv Corporation	UUT 2
Model Line:	EXL S1 UPS	
Model Number:	52SA12MADAAA862	
Serial Number:		D180000001

Product Construction Summary:
NEMA 1 Enclosure

Options/Subcomponent Summary:
1200 kVA UPS with I/O-3. Tested with the following options: Back feed disconnect (BFD), Bypass (Sharing) Inductors, and Common Mode Choke.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
6,933	39	128	79	8.49	6.71	28.66				
UUT Highest Passed Seismic Run Information										
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 2016		ICC-ES AC156		1.00	1.0	1.5	1.60	1.20	0.95	0.38
				1.43	0.0	1.5				

Test Mounting Details:



UUT 2 is base mounted-rigid to the shake table with sixteen (16) manufacturer supplied angles (P/N 544556P1) and sixteen (16) 3/4" Grade 8 Bolts, lock washer, and flat washer.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.