



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY

APPLICATION #: OSP-0684

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Eaton Corporation

Manufacturer's Technical Representative: James Hardy

Mailing Address: 3301 Spring Forest Road, Raleigh, NC 27616

Telephone: (919) 878-1060 Email: JamesHHardy@eaton.com

Product Information

Product Name: UPS and Batteries

Product Type: Batteries

Product Model Number: UL9540A Lithium Ion Battery (LIB) Cabinet

General Description: Lithium Ion Battery Cabinet with 16 or 17 Modules

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: None DATE: 09/10/2021

Applicant Information

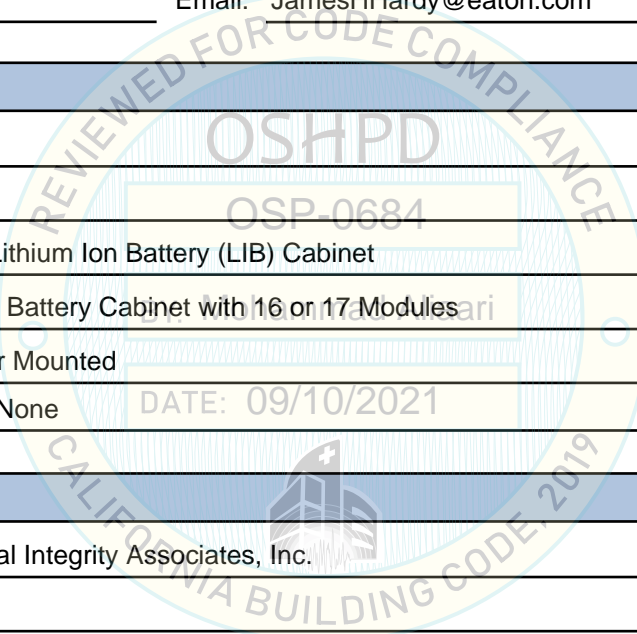
Applicant Company Name: Structural Integrity Associates, Inc.

Contact Person: Galen Reid

Mailing Address: 233 SW Wilson Ave Suite 101, Bend, OR 97702

Telephone: (541) 604-7225 Email: greid@structint.com

Title: Manager, TRU Compliance





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

Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.
Name: Andrew Coughlin California License Number: S6082
Mailing Address: 5215 Hellyer Ave, Suite 101, San Jose, CA 95138-1025
Telephone: (415) 635-8461 Email: acoughlin@structint.com

Certification Method

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

Testing Laboratory

Company Name: CLARK TESTING LABORATORY, INC.
Contact Person: Zachary E. Fisher
Mailing Address: 1801 Route 51, Jefferson Hills PA 15025
Telephone: (412) 387-1676 Email: zfischer@clarktesting.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.28(z/h = 1.0); 0.9(z/h = 0)

SDS (Design spectral response acceleration at short period, g) = 1.7(z/h = 1); 2.0(z/h = 0)

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

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

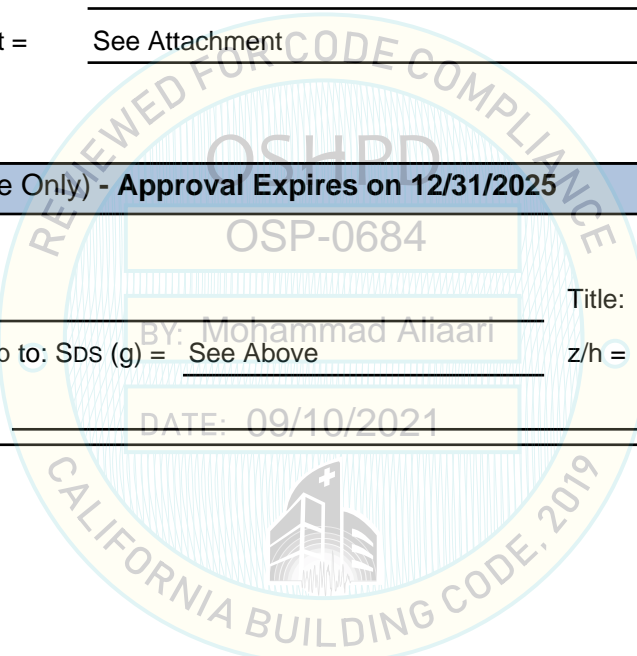
OSHPD Approval (For Office Use Only) - Approval Expires on 12/31/2025

Date: 9/10/2021

Name: Mohammad Aliaari Title: Senior Structural Engineer

Special Seismic Certification Valid Up to: SDS (g) = See Above z/h = See Above

Condition of Approval (if applicable): DATE: 09/10/2021



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

2001411-CR-001-R0



Manufacturer: Eaton Model Line: UL9540a Li-ion Battery Cabinet	TABLE 1
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Certified Product Construction Summary:
Carbon Steel Enclosure

Certified Options Summary:
16 or 17 Lithium Ion Battery Modules. Top wiring extension

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 2019 **Seismic Certification Limits:** $S_{DS} = 1.7g$ $z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 2.0g$ $z/h = 0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
UL9540a Li-Ion Battery Cabinet	128S	20.9	25.6	89.8	889	16 Li-ion Modules	1
	136S	20.9	25.6	89.8	1116	17 Li-ion Modules	2

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

2001411-CR-001-R0

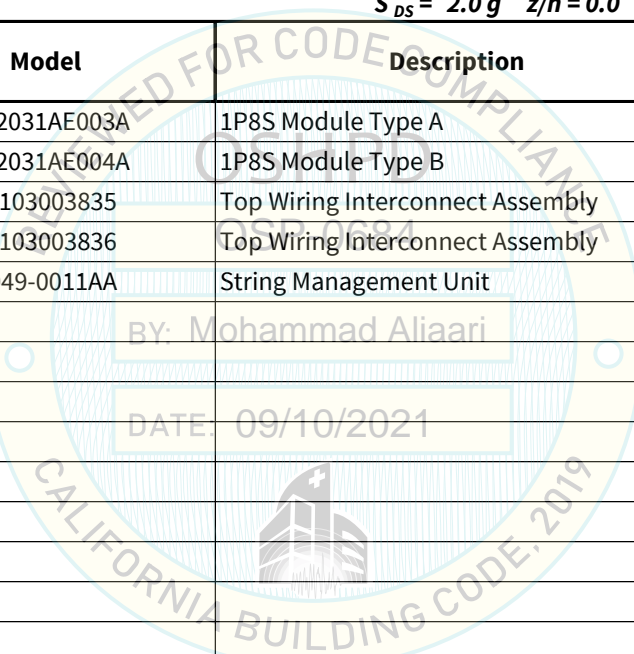


Manufacturer: Eaton	Table Description: Subcomponents	TABLE 2
Model Line: UL9540a Li-ion Battery Cabinet		

Building Code: CBC 2019	Seismic Certification Limits:	$S_{DS} = 1.7g \quad z/h = 1.0$	$I_P = 1.5$
		$S_{DS} = 2.0g \quad z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Li-ion Battery Module	Samsung	EM2031AE003A	1P8S Module Type A		1,2
		EM2031AE004A	1P8S Module Type B		1,2
Top Wiring Extension	Eaton	P-103003835	Top Wiring Interconnect Assembly		1
		P-103003836	Top Wiring Interconnect Assembly		2
SMU	Samsung	V049-0011AA	String Management Unit		1,2

BY: Mohammad Aliaari
DATE: 09/10/2021



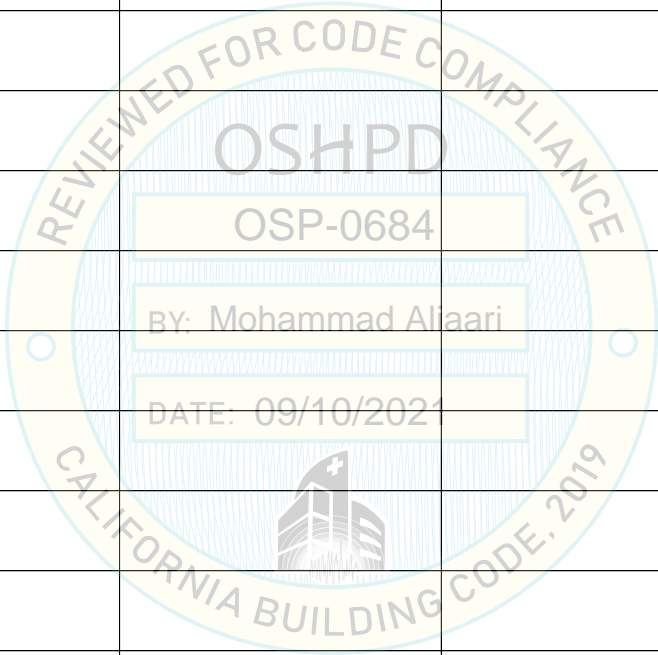
UNIT UNDER TEST (UUT) SUMMARY SHEET



2001411-CR-001-R0

Manufacturer: Eaton
Model Line: UL9540a Li-ion Battery Cabinet

UUT	Unit Description	Report Number	Testing Laboratory	S _{DS}	z/h	I _P
1	128S - 16 Module Li-ion Battery Cabinet	JID 20-01922	Clark Testing	1.7 2.0	1 0	1.5
2	136S - 17 Module Li-ion Battery Cabinet	JID 20-01922	Clark Testing	1.7 2.0	1 0	1.5



Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET



2001411-CR-001-R0

Manufacturer: Eaton	UUT 1
Model Line: UL9540a Li-ion Battery Cabinet	
Model Number: 128S Serial Number: N/A	

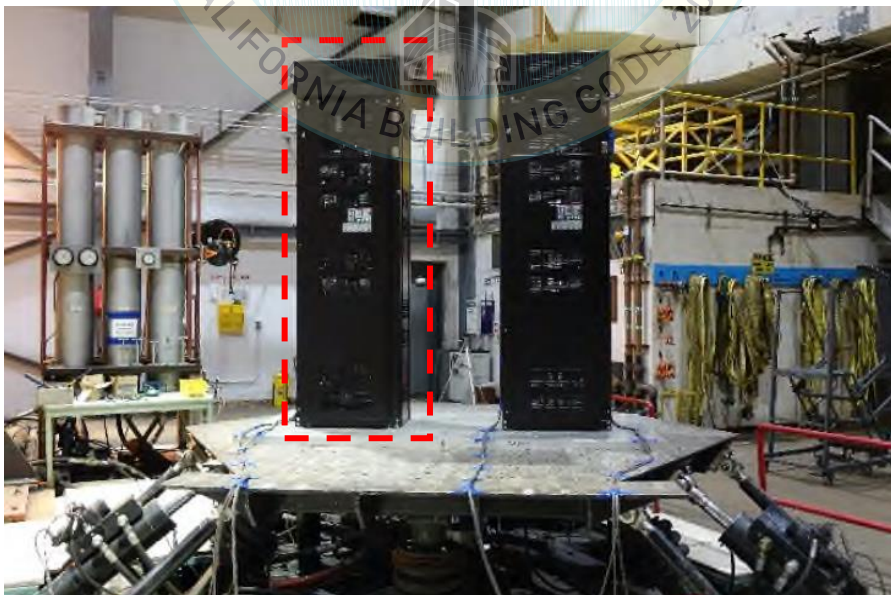
Product Construction Summary:
Carbon Steel Cabinet Enclosure

Options/Subcomponent Summary:
16 Li-ion Modules (bottom left module removed), Top Wiring Interconnect Assembly, SMU

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
889	20.9	25.6	89.8	4.4	7.9	>33.3

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 2019	ICC-ES AC156	1.7 2.0	1.0 0.0	1.5	2.72	2.04	1.33	0.53	

Test Mounting Details:



UUT was rigid base mounted using (4) 5/8" - 11 SAE Grade 5 bolts torqued to 90 ft.-lbs.
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

2001411-CR-001-R0



Manufacturer: Eaton	UUT 2
Model Line: UL9540a Li-ion Battery Cabinet	
Model Number: 136S Serial Number: N/A	

Product Construction Summary:
Carbon Steel Cabinet Enclosure

Options/Subcomponent Summary:
17 Li-ion Modules (fully populated), Top Wiring Interconnect Assembly, SMU

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1116	20.9	25.6	89.8	6.0	5.0	>33.3

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 2019	ICC-ES AC156	1.7 2.0	1.0 0.0	1.5	2.72	2.04	1.33	0.53	

Test Mounting Details:



UUT was rigid base mounted using (4) 5/8" - 11 SAE Grade 5 bolts torqued to 90 ft.-lbs.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.