



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
CAPABILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OSP – 0495 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Powervar, Inc.

Manufacturer's Technical Representative: Cherian Jose, Sales Engineer

Mailing Address: 1450 Lakeside Drive, Waukegan, IL 60085

Telephone: (847) 596-7005 Email: Cherian.jose@ametek.com

Product Information

Product Name: Wall Mounted MBS, Stepdown Transformer with MBS, Dual Transformer Cabinets, and Battery Cabinets

Product Type: Electrical Equipment

Product Model Number: See Attachment

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

General Description: Enclosures contain circuit breakers, circuit breaker accessories, transformers, receptacles and batteries.

Mounting Description: Rigid wall mounted or rigid base mounted

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

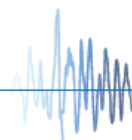
Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thvmcgroup.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: 12/16/16

Title: President Company Name: The VMC Group





DEPARTMENT OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT ACTIVITIES DEVELOPMENT DIVISION

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 12/16/15)

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

Company Name: The VMC Group

Name: Ken Tarlow California License Number: SE-2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: Ken.tarlow@thevmcgroup.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): _____

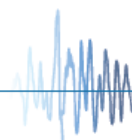
Testing Laboratory

Company Name: Dynamic Certification Laboratories

Contact Name: Kelly Laplace, Project Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: Kelly@shaketest.com





STATE OF CALIFORNIA DEPARTMENT OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT HEALTH SERVICES DEVELOPMENT DIVISION

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 12/16/15)

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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) = See attachment

S_{DS} (Design spectral response acceleration at short period, g) = See attachment

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 1.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See attachments

Overall dimensions and weight (or range thereof) = See attachments

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): _____

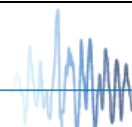
OSHDP Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: Ali Sumer Date: July 19, 2017

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = 1.0

Condition of Approval (if applicable): _____



Special Seismic Certification Certified Components



Manufacturers: C&C Power for Powervar

Product Line: Wall Mounted MBS (30/40 kVA), Stepdown Transformer with MBS and Dual Transformer Cabinet

Certified Product Construction: Powder-coated galvanized carbon steel enclosures

Mounting Description: Rigid wall mount or rigid base mount, as indicated

Model Number	Type	Manufacturer	Dimensions (in)			Weight (lb)	Mounting	Sds (g), z/h=1 ⁴	Fp/Wp	Unit
			Depth	Width	Height					
32010-MB3WM18	Wall Mounted MBS (30/40 kVA)	C&C Power	10	30	36	120	Rigid wall mount	2.50	1.88	Extrapolated ¹
32020-MB3WM18			10	30	36	120	Rigid wall mount	2.50	1.88	Extrapolated ¹
32030-MB3WM22			10	30	36	120	Rigid wall mount	2.50	1.88	Extrapolated ¹
32040-MB3WM22			10	30	36	120	Rigid wall mount	2.50	1.88	UUT1
32010-2FX2MB3	Stepdown Transformer with MBS	C&C Power	33	30	48	660	Rigid base mount	2.50	1.88	Extrapolated ²
32020-2FX2MB3			33	30	48	660	Rigid base mount	2.50	1.88	Extrapolated ²
32030-2FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	Extrapolated ²
32040-2FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	Extrapolated ²
32010-4FX2MB3			33	30	48	660	Rigid base mount	2.50	1.88	Extrapolated ²
32020-4FX2MB3			33	30	48	660	Rigid base mount	2.50	1.88	UUT3
32030-4FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	Interpolated
32040-4FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	UUT5
32010-6FX2MB3			33	30	48	660	Rigid base mount	2.50	1.88	Extrapolated ²
32020-6FX2MB3			33	30	48	660	Rigid base mount	2.50	1.88	Extrapolated ²
32030-6FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	Extrapolated ²
32040-6FX2MB3			33	30	60	810	Rigid base mount	2.50	1.88	Extrapolated ²
32800-04	Dual Transformer Cabinet	C&C Power	33	30	60	1120	Rigid base mount	1.50	1.13	UUT4
32800-07			33	30	60	1120	Rigid base mount	1.50	1.13	Extrapolated ³
32800-10			33	30	60	1120	Rigid base mount	1.50	1.13	Extrapolated ³
32800-12			33	30	60	1120	Rigid base mount	1.50	1.13	Extrapolated ³

Notes:

1. Extrapolated Wall Mounted MBS are identical to tested unit; only the internal ampacity of the circuit breaker changes. All physical aspects are the same. Manufacturing process is ISO 9001 certified.
2. Extrapolated Stepdown Transformer Units are bookended by tested units; only breaker amperage changes.
3. Extrapolated Dual Transformer Cabinet is identical to the tested 32800-04, except configured with different primary taps. Manufacturing process is ISO 9001 certified.
4. Certification level is limited to the lower rating of either the Certified Components, as listed here, or the subcomponents, as listed on the Certified Subcomponent tables.

Special Seismic Certification Certified Components



Manufacturer: C&C Power for Powervar

Product Line: Battery Cabinets

Certified Product Construction: Powder-coated galvanized carbon steel enclosures

Mounting Description: Rigid base mount

Model Number	Type	Category	Manufacturer	Dimensions (in)			Weight (lb)	Mounting	Sds (g), z/h=1 ¹	Fp/Wp	Unit
				Depth	Width	Height					
32020-BC57	Battery Cabinets	32010-32020	C&C Power	32	29	48	1,870	Rigid base mount	1.47	1.10	UUT7
32030-BC13		32030-32040		32	29	60	875	Rigid base mount	1.25	0.94	Extrapolated
32030-BC15							1,091	Rigid base mount	1.25	0.94	Extrapolated
32040-BC11							1,180	Rigid base mount	1.75	1.31	UUT10
32030-BC25							1,559	Rigid base mount	1.25	0.94	Interpolated
32040-BC18							1,559	Rigid base mount	1.25	0.94	Interpolated
32040-32							1,883	Rigid base mount	1.25	0.94	Interpolated
32030-BC45							1,883	Rigid base mount	1.25	0.94	Interpolated
32030-BC65							2,495	Rigid base mount	1.25	0.94	Interpolated
32040-BC44							2,570	Rigid base mount	1.25	0.94	UUT11

Note:

1. Certification level is limited to the lower rating of either the Certified Components, as listed here, or the subcomponents, as listed on the Certified Subcomponent tables.

Special Seismic Certification Product Nomenclature Guide



Manufacturer: C&C Power for Powervar

Product Line: Wall Mounted MBS and Stepdown Transformer with MBS

Wall Mounted MBS

A-B-C

Variable	Definition	Allowable Value	Allowable Value Description	Unit
A	Bypass rating	32010	10kVA	Extrapolated ¹
		32020	20kVA	Extrapolated ¹
		32030	30kVA	Extrapolated ¹
		32040	40kVA	UUT1
B	Unit type	MB3WM	3 breaker Maintenance Bypass / Wall mount	UUT1
C	Breaker rating	18	18kAIC breaker rating	Extrapolated ¹
		22	22kAIC breaker rating	UUT1

1. Option physically identical to that tested in UUT1, but with a different breaker trip rating.

Stepdown Transformer with MBS

A-B-C

Variable	Definition	Allowable Value	Allowable Value Description	Unit
A	Matching battery cabinet for 20 and 40kVA UPS	32010	10kVA	Extrapolated ¹
		32020	20kVA	UUT3
		32030	30kVA	Interpolated ²
		32040	40kVA	UUT5
B	Transformer	2FX2	208/208	Extrapolated ³
		4FX2	480/208	UUT3, UUT5
		6FX2	600/208	Extrapolated ³
C	Unit type	MB3	3 Breaker Maintenance Bypass	UUT3, UUT5

1. Extrapolated cabinet is identical to that tested in UUT3 - marketing change only.

2. Interpolated cabinet is identical to that tested in UUT5 - marketing change only.

3. Extrapolated transformer option is the same as tested in UUT3 and UUT5, but without bypass breakers.

Special Seismic Certification Product Nomenclature Guide



Manufacturer: C&C Power for Powervar

Product Line: Dual Transformer Cabinets and Battery Cabinets

Dual Transformer Cabinets

A-B

Variable	Definition	Allowable Value	Allowable Value Description	Unit
A	Unit Type	32800	Dual transformer cabinet	UUT4
B	Custom configuration	04	480/208 and 208/480	UUT4
		07	400/208 and 208/400	Extrapolated ¹
		10	480/208 and 208/400	Extrapolated ¹
		12	600/208 and 208/600	Extrapolated ¹

1. Extrapolated configurations are identical to the tested one, except different voltage taps are utilized.

Battery Cabinets

A-B-C

Variable	Definition	Allowable Value	Allowable Value Description	Unit
A	Matching battery cabinet for 20 and 40kVA UPS	32020	Battery cabinet 20	UUT7
		32030	Battery cabinet 27	Interpolated ¹
		32040	Battery cabinet 27	UUT10, UUT11
B	Unit Type	BC	Battery Cabinet	UUT7, UUT10, UUT11
C	Custom configuration	15	HX-100 batteries	Extrapolated ²
		11	HX-100 batteries	UUT10
		18	HX-150 batteries	Interpolated
		25	HX-150 batteries	Interpolated
		32	HX 205 batteries	Interpolated
		45	HX 205 batteries	Interpolated
		57	HX 205 batteries	UUT7
		65	HX 300 batteries	Interpolated
		44	HX 300 batteries	UUT11

1. Interpolated cabinet option is identical to that tested in UUT11 (marketing change only).

2. Same as tested in UUT10, but with fewer batteries.

Special Seismic Certification Certified Subcomponents



Product Line: Wall Mounted MBS

Certified Subcomponent: Enclosures and circuit breakers

Enclosures										
Model Number	Manufacturer	Description	Dimensions (in.)			Max Loaded Weight (lb.)	NEMA Rating	Material	Sds (g), z/h=1 ¹	Unit
			Width	Height	Depth					
90880	C&C Power, Inc.	90880 Type Enclosure	30	36	10	120	1	Powder-coated galvanized carbon steel	2.50	UUT1
Circuit Breakers										
Model Number	Manufacturer	Amperage (A)	Poles	Dimensions (in.)			Weight (lb.)	Material	Sds (g), z/h=1 ¹	Unit
				Width	Height	Depth				
C-F Frame	Eaton / Cutler Hammer	40 - 150	3	4	6	3	5	Plastic Body/Case	2.50	UUT1

Note:

1. Certification level is limited to the lower rating of either the Certified Subcomponents, as listed here, or the components, as listed on the Certified Components tables.

Special Seismic Certification Certified Subcomponents



Product Line: Stepdown Transformer with MBS

Certified Subcomponent: Enclosures, circuit breakers, and transformers

Enclosures										
Model Number	Manufacturer	Description	Dimensions (in.)			Max Loaded Weight (lb.)	NEMA Rating	Material	Sds (g), z/h=1 ¹	Unit
			Width	Height	Depth					
99726	C&C Power, Inc.	90855 Type Enclosure	30	36	10	120	1	Powder-coated galvanized carbon steel	2.50	UUT3, UUT5
Circuit Breakers										
Model Number	Manufacturer	Amperage (A)	Poles	Dimensions (in.)			Weight (lb.)	Material	Sds (g), z/h=1 ¹	Unit
				Width	Height	Depth				
C-F Frame	Eaton / Cutler Hammer	30 - 175	3	4	6	3	5	Plastic Body/Case	2.50	UUT3, UUT5
Transformers										
Model Number	Manufacturer	Description					Material		Sds (g), z/h=1 ¹	Unit
051-00048	C&C Power, Inc.	22KVA 480D-208Y/120V					Copper core		2.50	UUT3
051-00047		22KVA 208D-208Y/120V								Interpolated
051-00049		22KVA 600D-208Y/120V								Interpolated
051-00091		22KVA 208D-208Y/120V								Interpolated
051-00092		22KVA 480D-208Y/120V								Interpolated
051-00093		22KVA 600D-208Y/120V								Interpolated
051-00053		44KVA 208D-208Y/120V								Interpolated
051-00055		44KVA 600D-208Y/120V								Interpolated
051-00086		44KVA 480D-208Y/120V								Interpolated
051-00094		44KVA 208D-208Y/120V								Interpolated
051-00095		44KVA 600D-208Y/120V								Interpolated
051-00054		44KVA 480D-208Y/120V								UUT5

Notes:

1. Certification level is limited to the lower rating of either the Certified Subcomponents, as listed here, or the components, as listed on the Certified Components tables.

Special Seismic Certification Certified Subcomponents



Product Line: Dual Transformer Cabinet

Certified Subcomponent: Enclosures, circuit breakers, and transformers

Enclosures										
Model Number	Manufacturer	Description	Dimensions (in.)			Max Loaded Weight (lb.)	NEMA Rating	Material	Sds (g), z/h=1 ¹	Unit
			Width	Height	Depth					
99726	C&C Power, Inc.	90856 Type Enclosure	30	60	33	1,120	1	Powder-coated galvanized carbon steel	1.50	UUT4
Circuit Breakers										
Model Number	Manufacturer	Amperage (A)	Poles	Dimensions (in.)			Weight (lb.)	Material	Sds (g), z/h=1 ¹	Unit
				Width	Height	Depth				
C-F Frame	Eaton / Cutler Hammer	40	3	4	6	3	5	Plastic Body/Case	1.50	Extrapolated
		60							1.50	Extrapolated
		70							1.50	UUT4
		80							1.50	Interpolated
		150							1.50	UUT4
Transformers										
Model Number	Manufacturer	Description					Material	Sds (g), z/h=1 ¹	Unit	
051-0099	C&C Power, Inc.	22KVA 208D-480Y/277V					Copper core	1.50	Extrapolated	
051-0097		22KVA 208D-600Y/345V						1.50	Extrapolated	
051-0048		22KVA 480D-208Y/120V						1.50	Extrapolated	
051-0056		22KVA 600D-208Y/120V						1.50	Extrapolated	
051-00101		40kVA 208DD-480/277Y						1.50	UUT4	
051-0095		44KVA 208D-600Y/345V						1.50	Interpolated	
051-00054		44kVA 480D-208/120Y						1.50	UUT4	
051-0055		44KVA 600D-208Y/120V						1.50	Extrapolated	

Note:

1. Certification level is limited to the lower rating of either the Certified Subcomponents, as listed here, or the components, as listed on the Certified Components tables.

Special Seismic Certification Certified Subcomponents



Product Line: Battery Cabinets

Certified Subcomponent: Enclosures, batteries, circuit breakers, and circuit breaker accessories

Enclosures										
Model Number	Manufacturer	Description	Dimensions (in.)			Max Loaded Weight (lb.)	NEMA Rating	Material	Sds (g), z/h=1 ¹	Unit
			Width	Height	Depth					
91420	C&C Power, Inc.	BC20 Type Enclosure	29	48	32	1,870	1	Powder-coated galvanized carbon steel	1.47	UUT7
91427	C&C Power, Inc.	BC27 Type Enclosure	29	60	32	2,570	1		1.75	UUT10

Batteries					
Model Number	Manufacturer	Description	Material	Sds (g), z/h=1 ¹	Unit
12HX100	Energys	Energys HX Series Battery	Lead acid, hermetically sealed	1.75	UUT10
12HX150	Energys	Energys HX Series Battery	Lead acid, hermetically sealed	1.47	Interpolated
12HX205	Energys	Energys HX Series Battery	Lead acid, hermetically sealed	1.47	
12HX300	Energys	Energys HX Series Battery	Lead acid, hermetically sealed	1.25	UUT11

Circuit Breakers					
Model Number	Manufacturer	Description	Material	Sds (g), z/h=1 ¹	Unit
HFDDC3070L	Eaton / Cutler Hammer	C-Frame Breaker Frame	Plastic body/case	1.47	UUT7
JGEDC3250NN	Eaton / Cutler Hammer	G JG-Frame Circuit Breaker Frame	Plastic body/case	1.75	UUT10
JT3100FA	Eaton / Cutler Hammer	G JG-Frame Thermal Magnetic Trip Unit 100A	Plastic body/case	1.75	Extrapolated
JT3150FA	Eaton / Cutler Hammer	G JG-Frame Thermal Magnetic Trip Unit 150A	Plastic body/case	1.75	UUT10
JGEDC3100FAG	Eaton / Cutler Hammer	G JG-Frame Circuit Breaker 100A	Plastic body/case	1.75	Extrapolated
JGEDC3150FAG	Eaton / Cutler Hammer	G JG-Frame Circuit Breaker 150A	Plastic body/case	1.75	UUT10

Circuit Breaker Accessories					
Model Number	Manufacturer	Description	Material	Sds (g), z/h=1 ¹	Unit
A1X1PK	Eaton / Cutler Hammer	Series C F-Frame Auxiliary Switch 1	Plastic body/case	1.47	UUT7
SNT1RP03K	Eaton / Cutler Hammer	Series C F-Frame Shunt Trip 12-24VAC/VDC Right	Plastic body/case	1.47	UUT7
AUX1A1BPK	Eaton / Cutler Hammer	Series G EG, JG, & LG Frame Auxiliary Switch 1A/1B	Plastic body/case	1.75	UUT10
SNT024CPK	Eaton / Cutler Hammer	Series G EG, JG, & LG Frame Shunt Trip 24VAC/VDC	Plastic body/case	1.75	UUT10

Note:

1. Certification level is limited to the lower rating of either the Certified Subcomponents, as listed here, or the components, as listed on the Certified Components tables.

Special Seismic Certification

Tested Components



Manufacturers: C&C Power for Powervar

Product Line: Wall Mounted MBS (30/40 kVA), Stepdown Transformer with MBS, Dual Transformer Cabinet and Battery Cabinets

Tested Product Construction: Powder-coated galvanized carbon steel enclosures

Tested Mounting Description: Rigid wall mount or rigid base mount

Model Number	Type	Manufacturer	Dimensions (in)			Weight (lb)	Mounting	Sds (g), z/h=1	Unit
			Depth	Width	Height				
32040-MB3WM22	Wall Mounted MBS (30/40Kva)	C&C Power	10	30	36	120	Rigid wall mount	2.50	UUT1
32020-4FX2MB3	Stepdown Transformer with MBS	C&C Power	32	30	48	590	Rigid base mount	2.50	UUT3
32800-04	Dual Transformer Cabinet	C&C Power	33	30	60	1,120	Rigid base mount	1.50	UUT4
32040-4FX2MB3	Stepdown Transformer with MBS	C&C Power	33	30	60	710	Rigid base mount	2.50	UUT5
32020-BC57	Battery Cabinet	C&C Power	29	30	48	1,870	Rigid base mount	1.47	UUT7
32040-BC11	Battery Cabinet	C&C Power	32	29	60	1,180	Rigid base mount	1.75	UUT10
32040-BC44	Battery Cabinet	C&C Power	32	29	60	2,570	Rigid base mount	1.25	UUT11

UUT1**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Wall Mounted MBS**Model Number:** 32040-MB3WM22**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Subcomponent Summary:

Eaton C-F Frame circuit breaker

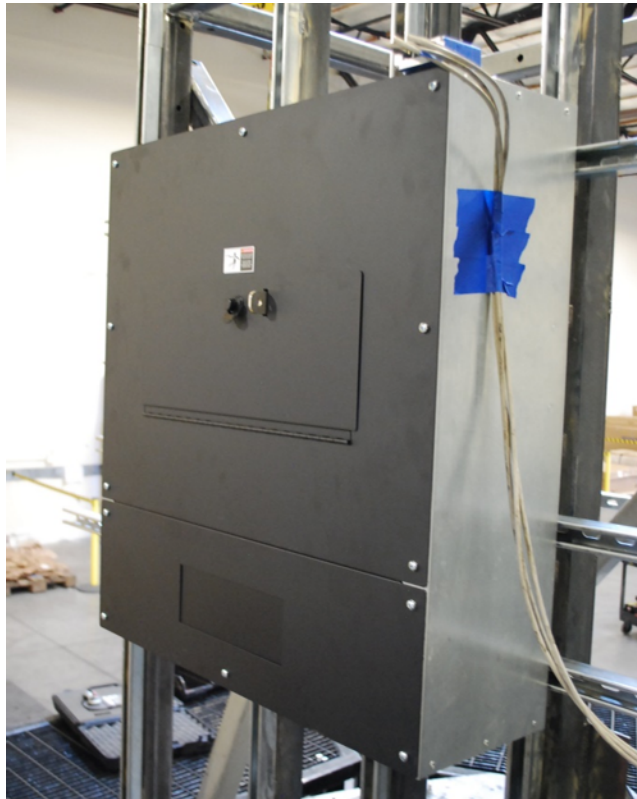
Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
120	UUT1	10	30	36	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

The unit was rigidly attached to the shake table interface wall frame using six 3/8-inch diameter Grade 5 bolts.

UUT3**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Stepdwn Transformer with MBS**Model Number:** 32020-4FX2MB3**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Eaton C-F Frame circuit breaker, C&C Power transformer

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
590	UUT3	32	30	48	9.3	7.5	13.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using four 1/2-inch diameter Grade 5 bolts.

UUT4**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Dual Transformer Cabinet**Model Number:** 32800-04**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Eaton C-F Frame circuit breaker, C&C Power transformers

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
1,120	UUT4	33	30	60	6.3	5.3	21.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.50	1.0	1.5	2.40	1.80	1.00	0.40

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using four 1/2-inch diameter Grade 5 bolts.

UUT5**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Stepdown Transformer with MBS**Model Number:** 32040-4FX2MB3**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Eaton C-F Frame circuit breaker, C&C Power transformer

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
710	UUT5	33	30	60	13.5	10.5	27.8

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using four 1/2-inch diameter Grade 5 bolts.

UUT7**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Battery Cabinet**Model Number:** 32020-BC57**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Energys batteries, Eaton circuit breaker and accessories

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
1,870	UUT7	29	30	48	8.8	13.8	22.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.47	1.0	1.5	2.35	1.76	0.98	0.39

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using six 1/2-inch diameter Grade 5 bolts.

UUT10**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Battery Cabinet**Model Number:** 32040-BC11**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Energys batteries, Eaton circuit breaker and accessories

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
1,180	UUT10	32	29	60	14.8	8.8	31.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.75	1.0	1.5	2.80	2.10	1.17	0.47

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using four 1/2-inch diameter Grade 5 bolts.

UUT11**UNIT UNDER TEST (UUT) Summary Sheet****Manufacturer:** C&C Power for Powervar**Product Line:** Battery Cabinet**Model Number:** 32040-BC44**Product Construction Summary:**

Powder coated galvanized carbon steel enclosure, NEMA 1

Options / Component Summary:

Energys batteries, Eaton circuit breaker and accessories

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
2,570	UUT11	32	29	60	9.0	3.5	17.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.25	1.0	1.5	2.00	1.50	0.83	0.33

Unit Mounting Description:

The unit was rigidly attached to the shake table interface plate using four 1/2-inch diameter Grade 5 bolts.