



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY
APPLICATION #: OSP - 0018

OSHPD Special Seismic Certification Preapproval (OSP)

Type: [] New [X] Renewal

Manufacturer Information

Manufacturer: Eaton

Manufacturer's Technical Representative: Dan Hrcir

Mailing Address: 221 Heywood Road, Arden NC 28704

Telephone: 828-687-3401 Email: DanEHrcir@eaton.com

Product Information

Product Name: Magnum DS Switchgear

Product Type: Low Voltage Metal-Enclosed Switchgear -0018

Product Model Number: See Product Range Summary
(List all unique product identification numbers and/or part numbers)

General Description: Low Voltage (600V Maximum), Metal-Enclosed Switchgear, 5000A maximum, NEMA type 1 &
3R enclosures, front and rear accessible. Seismic enhancements made to the test units and modifications to address
anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid floor and rigid floor/wall mounted. A minimum of (2) enclosures mechanically coupled
are required for all installations - no exceptions.

Applicant Information

Applicant Company Name: Eaton

Contact Person: Eddie Wilkie

Mailing Address: 175 Vista Blvd, Arden, NC 28704

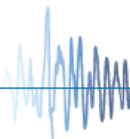
Telephone: 828-651-0707 Email: eddiewilkie@eaton.com

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: Eddie Wilkie Date: 12/16/19

Title: Director of Engineering Company Name: Eaton

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





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

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

Company Name: ISAT

Name: William V. Joerger California License Number: SE 4545

Mailing Address: 1020 Crews Road, Quite Q, Matthews, NC 28105

Telephone: 510-714-0216 Email: wvjoerger@isatsb.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): _____

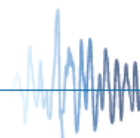
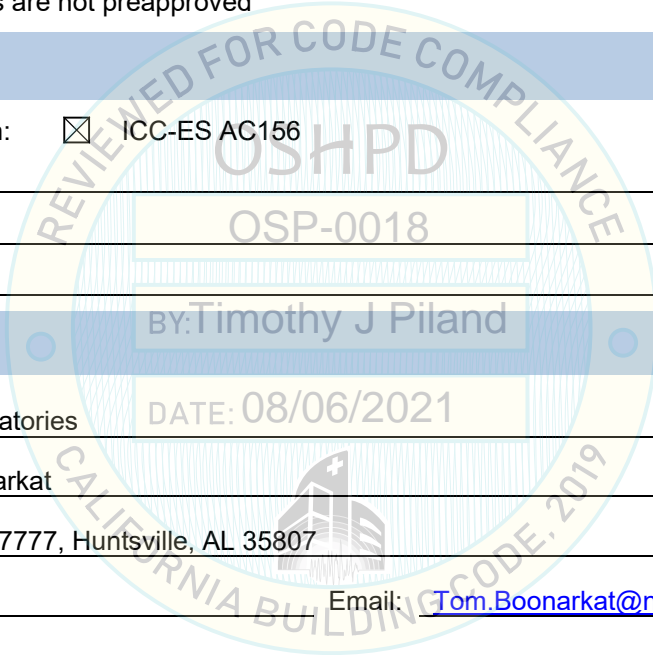
Testing Laboratory

Company Name: NTS Laboratories DATE: 08/06/2021

Contact Name: Tom Boonarkat

Mailing Address: P.O. Box 77777, Huntsville, AL 35807

Telephone: 256-716-4291 Email: Tom.Boonarkat@nts.com





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

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.70

S_{DS} (Design spectral response acceleration at short period, g) = 2.27

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) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See Resonance Summary

Overall dimensions and weight (or range thereof) = See Product Range Summary

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): _____

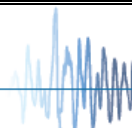
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025

Signature: Date: August 6, 2021

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.27 z/h = 1

Condition of Approval (if applicable): ***A minimum of (2) enclosures mechanically coupled are required for all installations – no exceptions.***



Certified Product Range Summary
Magnum DS LV Metal Enclosed Switchgear^{2,3,4}

Model/UUT Identifier ¹	Mounting	Section Continuous Current Rating (Amps)	Width (in.)	Depth (in.)	Height (in.)	Maximum Weight (lbs.)	Maximum C.G. (Height) [in.]	S _{bs} (g)	F _p /W _p	NEMA Enclosure Type	UUT
XL13031-001a	Rear Accessible	2000	19	92	96.5	1433	47.71	2.27	1.70	1	8
Magnum DS		2000	18/22/24/30	54/60/66/72/78/84/90	96	2400	50.38			1	Interpolated
Magnum DS		3200	18/22/24/30/44	54/60/66/72/78/84/90	96	3000	50.38			1	Interpolated
XL13031-001c		3200	23	92	96.5	1426	46.03			1	10
Magnum DS		4000	22/24/30/32/44/60	54/60/66/72/78/84/90	96	4419	50.38			1	Interpolated
L00G7JD-PA01		4000	30	66	96	2478	49.93			1	1
L00G7JD-PA02		4000	22	66	96	1395	43.18			1	2
L00G7JD-PA03		4000	22	66	96	1613	50.38			1	3
Magnum DS		5000	22/24/30/32/44/60	54/60/66/72/78/84/90	96	4419	50.38			1	Interpolated
XL13031-001b		5000	60	92	96.5	4419	48.08			1	9
Magnum DS	Front Accessible	2000	22/30/44	40/54	96	2200	54.10	2.27	1.70	1	Extrapolated
Magnum DS		3200	22/30/44	54	96	2200	54.10			1	Extrapolated
XL13031-002a		3200	23	58	117	1437	54.10			1	11
XL13031-007a		3200	22.5	58.25	99.5	1450	51.10			1	40
XL13031-002b		3200	22	58	117	998	53.40			1	12
XL13031-007b		3200	22	58.25	99.5	1007	50.90			1	41
XL13031-002c		3200	22	58	99.12	1475	51.20			1	13
XL13031-007c		3200	22.5	58.25	99.5	1488	51.00			1	42
Magnum DS		4000	22/30/44	54	96	4287	54.10			1	Interpolated
Magnum DS		5000	22/30/44	54	96	4287	54.10			1	Interpolated
XL13031-002d		5000	61	58	99.12	4287	51.30			1	14

Magnum DS LV Metal-Enclosed Outdoor Switchgear											
Magnum DS	NEMA 3R	2000	18	125	111	1800	54.40	2.27	1.70	3R	Extrapolated
Magnum DS		2000	18/22/24/30	125	111	2000	54.40			3R	Extrapolated
Magnum DS		3200	18/22/24/30/44	125	111	3000	54.40			3R	Extrapolated
XL13031-004b		3200	30	125.5	111.75	2079	54.40			3R	16
Magnum DS		4000	22/24/30/32/44	125	111	5000	54.40			3R	Interpolated
XL13031-004a		5000	52	125.5	111.75	6226	52.20			3R	15

- 1- Engineered to order product. Unique identifiers provided for each vertical section.
- 2 - Manufactured by Eaton.
- 3 - Certification applies to a minimum of (2) Switchgear enclosures mechanically coupled.
- 4 - All bus material made from Copper.



Magnum DS Switchgear Certified Enclosures^{1,2}

Magnum DS LV Metal-Enclosed Indoor Switchgear					
NEMA Type	Dimensions (in.)			Manufacturer	UUT Status
	Width	Depth	Height		
1	19	92	96.5	Eaton	8
1	18	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	23	92	96.5	Eaton	10
1	23	58	117	Eaton	11
1	22	58	117	Eaton	12
1	22	58	99.12	Eaton	13
1	22	66	96	Eaton	2,3
1	22.5	58.25	99.5	Eaton	40,42
1	22	58.25	99.5	Eaton	41
1	22	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	30	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	30	66	96	Eaton	1
1	32	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	44	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	60	40.2/54/60/66/72/78/84/90	117	Eaton	Interpolated
1	61	58	99.12	Eaton	14
1	60	92	96.5	Eaton	9
Magnum DS LV Metal-Enclosed Outdoor Switchgear					
3R ³	18	125	111	Eaton	Extrapolated
3R ³	22	125.5	111.75	Eaton	16
3R ³	30	125	111	Eaton	Interpolated
3R ³	44	125.5	111.75	Eaton	15

1. All enclosures made from carbon steel
2. All enclosure dimensions are nominal, extraneous items such as hardware, devices and handles are not included.
3. Enclosure widths shown are nominal widths of NEMA 1 enclosures. A 3R enclosure adds approximately 8" to the outermost enclosures (only) of lineup of Switchgear. The interior sections are nominal widths as shown.

Certified Power Circuit Breakers - Magnum DS/DN/SB

Frame Size (Amperes)	Model	Maximum Voltage (Vac)	Dimensions & Weights				Manufacturer	UUT Status
			Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)		
800	MDSC08	600	12.51	20.82	16.76	145	Eaton	Extrapolated
800	MDN608	600	12.51	20.82	16.76	130	Eaton	Extrapolated
1600	MDN616	600	12.51	20.82	16.76	130	Eaton	Extrapolated
2000	MDNC20XEA	600	12.51	20.82	16.76	145	Eaton	8
2000	MDS/MSB	600	16.15	20.82	16.76	145	Eaton	Interpolated
800	MDSC083WEA	600	16.15	20.82	16.76	145	Eaton	15,16
800	MDS/MSB	600	16.15	20.82	16.76	145	Eaton	Interpolated
1600	MDS/MSB	600	16.15	20.82	16.76	145	Eaton	Interpolated
1600	MDS/MSB	600	16.15	20.82	16.76	145	Eaton	Interpolated
2000	MDS/MSB	600	16.15	20.82	16.76	145	Eaton	Interpolated
2500	MDS/MSB	600	16.15	20.82	16.76	175	Eaton	Interpolated
3200	MDSC323WEA	600	16.15	20.82	16.76	175	Eaton	10,11,13,16,40,42
4000	MDS/MSB/MDN	600	35.75	20.82	16.76	310	Eaton	Interpolated
4000	MDN64N	600	24.9	20.82	16.76	177	Eaton	1
5000	MDSC5A4WEA	600	45.25	20.82	16.76	310	Eaton	9,14
5000	MDSC503WEA	600	35.75	20.82	16.76	310	Eaton	15



Magnum DS Switchgear

Certified Control Power Transformers

Size (kVA) [Pri-Sec. Volt]	Winding Material	Part Number	Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)	Manufacturer	UUT Status
1 [600-120]	Copper	114B738G01	9	7.35	9	30	ITI	Extrapolated
1 [480-120]	Copper	114B738G02	9	7.35	9	30	ITI	8,11,40
1 [240-120]	Copper	114B738G04	9	7.35	9	30	ITI	Interpolated
1 [208-120]	Copper	114B738G05	9	7.35	9	30	ITI	Interpolated
2 [600-120]	Copper	114B738G11	9	8.3	9	35	ITI	Interpolated
2 [480-120]	Copper	114B738G12	9	8.3	9	35	ITI	Interpolated
2 [240-120]	Copper	114B738G14	9	8.3	9	35	ITI	Interpolated
2 [208-120]	Copper	114B738G15	9	8.3	9	35	ITI	Interpolated
3 [600-120]	Copper	114B738G21	9	9	9	40	ITI	Interpolated
3 [480-120]	Copper	114B738G22	9	9	9	40	ITI	13,42
3 [240-120]	Copper	114B738G24	9	9	9	40	ITI	Interpolated
3 [208-120]	Copper	114B738G25	9	9	9	40	ITI	Interpolated
5 [600-120]	Copper	114B738G31	9	10.5	9	60	ITI	Interpolated
5 [240-120]	Copper	114B738G34	9	10.5	9	60	ITI	Interpolated
5 [208-120]	Copper	114B738G35	9	10.5	9	60	ITI	Interpolated
5 [480-120]	Copper	114B738G32	9	10.5	9	60	ITI	16
15 [480-120]	Copper	S20N11S15N	19	13.38	10.46	216	EATON	15

Certified Potential Transformers

Size (VA) [Pri-Sec. Volt]	Winding Material	Part Number	Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)	Manufacturer	Test Status
150 [480-120]	Copper	4601B05H16	4.75	4.65	10.25	24	ITI	11,40
300 [480-120]	Copper	475-480	4.75	4.38	6.5	12.5	ITI	8,16
750 [480-120]	Copper	450-480	4.75	4.38	6.5	25	ITI	9,15

Certified Meters

Model	Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)	Manufacturer	Test Status
PXD-MMG	7.8	2.54	9.02	2	Eaton	9,14,15
PXM2000	4.85	4.97	4.85	2	Eaton	13,42
PXM4000	9.56	8.72	9	9.2	Eaton	Interpolated
PXM6000	9.56	8.72	9	9.2	Eaton	14
PXM8000	9.56	7.72	9	9.2	Eaton	14,15

Certified Quenching Devices

Style	Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)	Manufacturer	Test Status
478C709G01	16.15	20.82	16.76	175	Eaton	2,3

UUT 1 (Unit Under Test) Summary Sheet

Manufacturer: Eaton

Model Number: L00G7JD-PA01

Product Construction Summary:

Cabinet is constructed of powder coated carbon steel, NEMA 1 enclosure rating.

Options/Component Summary: 4000A Magnum DS Switchgear, 4000A MDN circuit breaker (MDN64N), breaker lifting device

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
2478	30.00	66.00	96.00	8	6.3	29.6

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{flx-H}	A _{rig-H}	A _{flx-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	49.93	2.43	1	1.5	3.89	2.92	1.63	0.66

UUT maintained structural integrity and functionality as observed in post test inspection and operation checks.



UUT was mounted to a rigid base with (6) 1/2" bolts (Grade 5). The steel frame (carbon steel) was welded to the shake table.

UUT 2 (Unit Under Test) Summary Sheet

Manufacturer: Eaton

Model Number: L00G7JD-PA02

Product Construction Summary:

Cabinet is constructed of powder coated carbon steel, NEMA 1 enclosure rating.

Options/Component Summary: 4000A Magnum DS Switchgear, Arc Quenching Device (478C709G01)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1395	22.00	66.00	96.00	8	6.3	29.6

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S_{DS} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-V}	A_{rig-V}
CBC 2019	ICC-ES AC156	43.18	2.43	1	1.5	3.89	2.92	1.63	0.66

UUT maintained structural integrity and functionality as observed in post test inspection and operation checks.



UUT was mounted to a rigid base with (6) 1/2" bolts (Grade 5). The steel frame (carbon steel) was welded to the shake table.

UUT 3 (Unit Under Test) Summary Sheet

Manufacturer: Eaton

Model Number: L00G7JD-PA03

Product Construction Summary:

Cabinet is constructed of powder coated coated carbon steel, NEMA 1 enclosure rating.

Options/Component Summary: 4000A Magnum DS Switchgear, Arc Quenching Device (478C709G01), Breaker Lifting Device

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1613	22.00	66.00	96.00	7.9	6.2	29.6

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{flx-H}	A _{rig-H}	A _{flx-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	50.38	2.43	1	1.5	3.89	2.92	1.63	0.66

UUT maintained structural integrity and functionality as observed in post test inspection and operation checks.



UUT was mounted to a rigid base with (6) 1/2" bolts (Grade 5). The steel frame (carbon steel) was welded to the shake table.

UUT 8 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-001a

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 2000A, copper bus.

Options/Component Summary: Magnum Breaker, 2000A (Model: MDNC203XEA; 1kVA CPT, 480-120 (Part#: 114B738G02); 300VA PT, 480-120 (Part#: 475-480)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1433	19	92	96.5	9.8	8.5	>33

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{fix-H}	A _{rig-H}	A _{fix-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	47.71	3.34	1	1.5	5.34	4.01	2.24	0.90

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (6) 1/2" bolts. The steel frame was welded to the shake table.

UUT 9 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-001b

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 5000A, Copper Bus.

Options/Component Summary: Magnum Breaker, 5000A (Model: MDSC5A4WEA); 750VA PT, 480-120 (Part#: 450-480); Power Xpert Meter (Part#: PXD-MMG)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
4419	60	92	96.5	9.8	8.5	>33

Seismic Test Parameters

Building Code	Test Criteria	C.G.- Height (in.)	S _{DS} (g)	z/h	I _p	A _{flx-H}	A _{rig-H}	A _{flx-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	48.08	3.34	1	1.5	5.34	4.01	2.24	0.90

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (6) 1/2" bolts. The steel frame was welded to the shake table.

UUT 10 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-001c

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus.

Options/Component Summary: Magnum Breaker, 3200A (Model: MDSC323WEA)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1426	23	92	96.5	9.8	8.5	>33

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{Ds} (g)	z/h	I _p	A _{fix-H}	A _{rig-H}	A _{fix-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	46.3	3.34	1	1.5	5.34	4.01	2.24	0.90

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (6) 1/2" bolts. The steel frame was welded to the shake table.

UUT 11 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-002a

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus, Front Accessible, Arc Resistant.

Options/Component Summary: Magnum Breaker, 3200A (Cat#: MDSC323WEA); 1kVA CPT, 480-120 (Part#: 114B738G02); 150VA VT, 480-120 (Part#: 4601B05H16)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1437	23	58	117	7	6.8	20

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{fix-H}	A _{rig-H}	A _{fix-v}	A _{rig-v}
CBC 2019	ICC-ES AC156	54.1	3.29	1	1.5	5.26	3.95	2.20	0.89

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

UUT 12 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-002b

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus, Arc Resistant.

Options/Component Summary:

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
998	22	58	117	7	6.8	20

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S_{DS} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-v}	A_{rig-v}
CBC 2019	ICC-ES AC156	53.4	3.29	1	1.5	5.26	3.95	2.20	0.89

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

UUT 13 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-002c

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus, Front Accessible.

Options/Component Summary: Magnum Breaker, 3200A (Model: MDSC323WEA); 3kVA CPT, 480-120 (Part#: 114B738G22); Power Xpert Meter (Part#: PXM2000)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1475	22	58	99.12	7	6.8	20

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{fix-H}	A _{rig-H}	A _{fix-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	51.2	3.29	1	1.5	5.26	3.95	2.20	0.89

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

UUT 14 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-002d

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 5000A, Copper Bus, Front Accessible.

Options/Component Summary: Magnum Breaker, 5000A (Model: MDSC5A4WEA); Power Xpert Meter (Part#: PXM6000); Power Xpert Meter (Part#: PXM8000); Power Xpert Display (Part# PXD-MMG); Power Xpert Meter (Part#: PXD-MMG)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
4287	61	58	99.12	7	6.8	21

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{fix-H}	A _{rig-H}	A _{fix-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	51.3	3.29	1	1.5	5.26	3.95	2.20	0.89

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

UUT 15 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-004a

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 3R enclosure rating. 5000A, Copper Bus.

Options/Component Summary: Magnum Breaker, 800A (Model: MDSC083WEA); Magnum Breaker, 800A (Model: MDSC083WEA); Magnum Breaker, 800A (Model: MDSC083WEA); Magnum Breaker, 5000A (Model: MDSC503WEA); 15kVA CPT, 480-120 (Part #: S20N11S15N); 750VA VT, 480-120 (Part#: 450-480); Power Xpert Meter (Part#: PXM8000); Power Xpert Meter (Part#: PXD-MMG)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
6226	52	125.5	111.75	6.7	4.8	18

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S_{DS} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-V}	A_{rig-V}
CBC 2019	ICC-ES AC156	52.2	2.27	1	1.5	3.63	2.72	1.52	0.61

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (5) 3/4" bolts. The steel frame was welded to the shake table.

UUT 16 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-004b

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 3R

enclosure rating. 3200A, Copper Bus.

Options/Component Summary: Magnum Breaker, 800A (Model: MDSC083WEA); Magnum Breaker, 800A (Model: MDSC083WEA); Magnum Breaker, 3200A (Model: MDSC323WEA); 5kVA CPT, 480-120 (Part#: 114B738G32); 300VA VT, 480-120 (Part#: 475-480)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
2079	30	125.5	111.75	6.7	4.8	18

Seismic Test Parameters

Building Code	Test Criteria	C.G.- Height (in.)	S_{Ds} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-V}	A_{rig-V}
CBC 2019	ICC-ES AC156	54.4	2.27	1	1.5	3.63	2.72	1.52	0.61

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (5) 3/4" bolts. The steel frame was welded to the shake table.

UUT 40 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-007a

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus.

Options/Component Summary: Magnum Breaker, 3200A (Model: MDSC323WEA); 1kVA CPT, 480-120 (Part#: 114B738G02); 150VA VT, 480-120 (Part#: 4601B05H16)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1450	22.5	58.25	99.5	7.6	5.1	26

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S_{DS} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-V}	A_{rig-V}
CBC 2019	ICC-ES AC156	51.1	2.83	1	1.5	4.53	3.40	1.90	0.76

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (2) 1/2" bolts (bottom frame) and (2) 1/2" bolts (wall fixture). The steel frame was welded to the shake table.

UUT 41 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-007b

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus.

Options/Component Summary: Terminals and connecting copper bus for external power cable connections. No internal electrical components.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1007	22	58.25	99.5	7.6	5.1	26

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S_{Ds} (g)	z/h	I_p	A_{fix-H}	A_{rig-H}	A_{fix-V}	A_{rig-V}
CBC 2019	ICC-ES AC156	50.9	2.83	1	1.5	4.53	3.40	1.90	0.76

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (2) 1/2" bolts (bottom frame) and (2) 1/2" bolts (wall fixture). The steel frame was welded to the shake table.

UUT 42 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Magnum DS Low Voltage Switchgear

Model Number: XL13031-007c

Product Construction Summary: Cabinet is constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating. 3200A, Copper Bus.

Options/Component Summary: Magnum Breaker, 3200A (Model: MDSC323WEA); 3kVA CPT, 480-120 (Part#: 114B738G22); Power Xpert Meter (Part#: PXM2000)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1488	22.5	58.25	99.5	7.6	5.1	26

Seismic Test Parameters

Building Code	Test Criteria	C.G.-Height (in.)	S _{DS} (g)	z/h	I _p	A _{flx-H}	A _{rig-H}	A _{flx-V}	A _{rig-V}
CBC 2019	ICC-ES AC156	51	2.83	1	1.5	4.53	3.40	1.90	0.76

UUT maintained structural integrity and functionality as confirmed in post test inspection and operation checks.



UUT was mounted to a rigid frame using (2) 1/2" bolts (bottom frame) and (2) 1/2" bolts (wall fixture). The steel frame was welded to the shake table.