APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0151 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Eaton

Manufacturer's Technical Representative: Eddie Wilkie

Mailing Address: 175 Vista Blvd, Arden, NC 28704

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

Product Information

Product Name: H-Max Series Drives, H-Max Series Intellipass and IntelliDisconnect Drives

Product Type: Low Voltage Adjustable Frequency Drives

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

General Description: Low Voltage Motor Drives, NEMA 1and 12, 480V. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid Wall Mounted

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, 2013.

Signature of Applicant: Eddie Wilkie Date: 3/14/13

Title: Director of Engineering Company Name: Eaton

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: Wyle Laboratories

Contact Name: Phil McNaught

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

Telephone: 256-716-4130 Email: Phil.mcnaught@wyle.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 2.34

S_{DS} (Design spectral response acceleration at short period, g) = 3.12

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) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

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, 2010: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☒ Manufacturer's Catalog

☒ Other(s) (Please Specify): Product Range Summary

OSHPD Approval (For Office Use Only) – **Approval Expires on December 31, 2019**

Signature: Date: July 15, 2013

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 3.12 z/h = 1.0

Condition of Approval (if applicable):

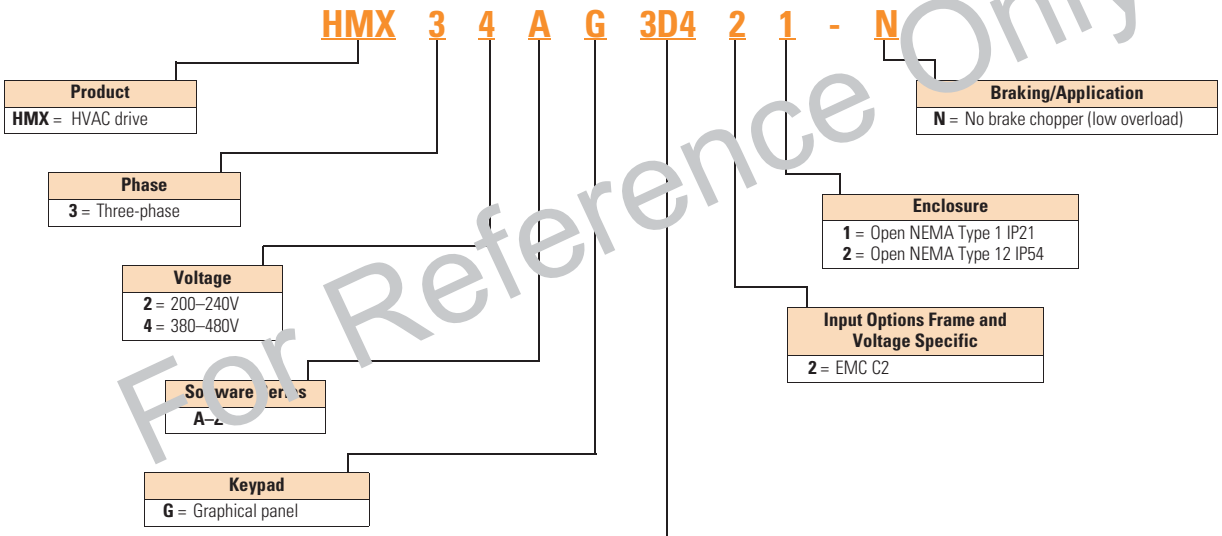
Certified Product Range Summary
H-Max, Intellipass and Intellidisconnect Drives

HMX Low Voltage Adjustable Frequency Drives											
Model Line	Model#	Frame Size	Voltage	HP Rating	Maximum Dimensions/Weight				S_{DS} (g)	NEMA Enclosure Rating[a]	Unit Under Test
					Width (in.)	Depth (in.)	Height (in.)	Weight (lbs.)			
H-Max (HMX)	HMX34AG01221-N	4	480	7.5	5	7.75	13.25	14	3.12	1	2
			480	1.5-7.5	5	7.75	13.25	14		12[b]	Interpolated
			230	0.75-4	5.04	7.77	12.89	13.2		1,12[b]	Interpolated
		5	230	5-10	5.67	8.73	16.5	22		1,12[b]	Interpolated
			480	10-20						1,12[b]	Interpolated
		6	230	15-20	7.68	9.29	21.93	44.1		1,12[b]	Interpolated
			480	25-40						1,12[b]	Interpolated
		7	230	25-40	9.06	10.49	25.98	82.6		1,12[b]	Interpolated
			480	50-75						1,12[b]	Interpolated
		8	230	50-75	11.42	13.76	38.02	154		1,12[b]	Interpolated
			480	100-150						1,12[b]	Interpolated
		9	230	100-125	18.9	14.63	45.28	238.1		1,12[b]	Interpolated
			480	200-250	19	15	45.5	262		1	Interpolated
	HMX34AG31022-N		480	250	19	15	45.5	262	3.12	12[b]	3
H-Max (HMX) Intellipass and IntelliDisconnect	HMX01134NA	4	480	7.5	7.5	12	31	48	3.12	1	4
			480	1-7.5	7.5	12	31	48		12[b]	Interpolated
			230	1-3	7.88	12.49	31	48		1,12[b]	Interpolated
			208	1-3	7.88	12.49	31	48		1,12[b]	Interpolated
		5	208	5-10	9.6	15.3	38.31	78		1,12[b]	Interpolated
			230	5-10							Interpolated
			480	10-20							Interpolated
		6	208	15-20	11.44	15.8	46.4	125		1,12[b]	Interpolated
			230	15-20	11.44	15.8	46.4	125		1,12[b]	Interpolated
			480	25-40	11.5	16	46.5	120		12[b]	Interpolated
	HMX05234NA		480	40	11.5	16	46.5	120	3.12	1	5
		7	208	25-30	14.52	15.68	59.46	200		1,12[b]	Interpolated
			230	25-40	14.52	15.68	59.46	200		1,12[b]	Interpolated
			480	50-75	14.5	16.5	59.5	194		12[b]	Interpolated
	HMX09634NA		480	75	14.5	16.5	59.5	194	3.12	1	6

a. All enclosures made from low carbon steel.
b. Type 12 enclosures include gasketing for ingress protection.

H-Max Series Drives
Product Numbering System

H-Max Series Drives



Amperes

200–240 Volts				380–480 Volts			
3D7 =	3.7A–0.75 hp, 0.55 kW	**062** =	62A–20 hp, 15 kW	**3D4** =	3.4A–1.5 hp, 1.1 kW	**046** =	46A–30 hp, 22 kW
4D8 =	4.8A–1 hp, 0.75 kW	**075** =	75A–25 hp, 18.5 kW	**4D8** =	4.8–2 hp, 1.5 kW	**061** =	61A–40 hp, 30 kW
6D6 =	6.6A–1.5 hp, 1.1 kW	**088** =	88A–30 hp, 22 kW	**5D6** =	5.6A–3 hp, 2.2 kW	**072** =	72A–50 hp, 37 kW
8D0 =	8A–2 hp, 1.5 kW	**105** =	105A–40 hp, 30 kW	**8D0** =	8A–4 hp, 3 kW	**087** =	87A–60 hp, 45 kW
011 =	11A–3 hp, 2.2 kW	**140** =	140A–50 hp, 37 kW	**9D6** =	9.6A–5 hp, 4 kW	**105** =	105A–75 hp, 55 kW
012 =	12A–4 hp, 3 kW	**170** =	170A–60 hp, 45 kW	**012** =	12A–7.5 hp, 5.5 kW	**140** =	140A–100 hp, 75 kW
018 =	18A–5 hp, 4 kW	**205** =	205A–75 hp, 55 kW	**016** =	16A–10 hp, 7.5 kW	**170** =	170A–125 hp, 90 kW
024 =	24A–7.5 hp, 5.5 kW	**261** =	261A–100 hp, 75 kW	**023** =	23A–15 hp, 11 kW	**205** =	205A–150 hp, 110 kW
031 =	31A–10 hp, 7.5 kW	**310** =	310A–125 hp, 90 kW	**031** =	31A–20 hp, 15 kW	**261** =	261A–200 hp, 132 kW
048 =	48A–15 hp, 11 kW			**038** =	38A–25 hp, 18.5 kW	**310** =	310A–250 hp, 160 kW

Notes

All boards are varnished (conformed coated). Corrosion resistant.

Battery included in all drives for real-time clock.

Keypad kit includes HOA bypass.

Keypad kit includes HOA, back reset for Europe application.

EMI/RFI filters included.

DC link choke included.

H-Max Series IntelliPass and IntelliDisconnect Drives Product Numbering System

H-Max Series IntelliPass and IntelliDisconnect Drives

HMX 011 3 4 N A _ _ _ _ _ _ _ _ _ _

Build options alphabetically and numerically.

Product
HMX = HVAC drive (VT) (low overload)

NEC Ampere Ratings

208 Volts	480 Volts
4D5 = 4.5A—1 hp	**2D1** = 2.1A—1 hp
7D5 = 7.5A—2 hp	**3D4** = 3.4A—2 hp
011 = 11A—3 hp	**5D6** = 5.6A—3 hp
017 = 17A—5 hp	**9D6** = 9.6A—5 hp
025 = 25A—7.5 hp	**011** = 11A—7.5 hp
031 = 31A—10 hp	**014** = 14A—10 hp
047 = 47A—15 hp	**021** = 21A—15 hp
060 = 60A—20 hp	**027** = 27A—20 hp
075 = 75A—25 hp	**034** = 34A—25 hp
088 = 88A—30 hp	**040** = 40A—30 hp
230 Volts	**052** = 52A—40 hp
4D2 = 4.2A—1 hp	**065** = 65A—50 hp
7D5 = 7.5A—2 hp	**077** = 77A—60 hp
9D6 = 9.6A—3 hp	**096** = 96A—75 hp
016 = 16A—5 hp	
022 = 22A—7.5 hp	
028 = 28A—10 hp	
042 = 42A—15 hp	
054 = 54A—20 hp	
068 = 68A—25 hp	
080 = 80A—30 hp	

Braking/Application
N = No brake chopper (low overload)

Voltage
1 = 208V
2 = 230V
4 = 480V

Enclosure Style
3 = IntelliPass NEMA Type 1
4 = IntelliPass NEMA Type 1
5 = IntelliPass NEMA Type 3R
A = IntelliDisconnect NEMA Type 1
B = IntelliDisconnect NEMA Type 12
C = IntelliDisconnect NEMA Type 3R

Software Series
A–Z

Extended I/O Options in Slot D and E
B1 = 6 x DI /DO, Each digital input can be individually programmed as digital output
B2 = 1RO (NC/NO), 1RO (NO), 1 Thermistor
B4 = 1 x AI, 2 x AO (isolated)
B5 = 3 x RO
B9 = 1RO (NO), 5 DI 42–240 Vac input
BF = Expander IO, 1 AO, 2 DO, 1 RO

Option Communications in Slot D and E
C = LONWORKS®

EMC Upgrade Option
EMC C2 Standard

Keypad Options
None available

IntelliDisconnect Options
L3 = Pilot lights (Power ON, RUN, Fault)
P3 = Fused drive isolation
PE = Output contactor
SA = Space heater w/transformer (Type 3R only)

IntelliPass Bypass Options
L4 = Pilot lights (Power ON, RUN, Fault, Bypass)
P3 = Fused drive isolation (can not be used with P6 or MI)
P6 = Third contactor drive isolation (cannot be used with P3, IS or MI)
M1 = Manual bypass, includes isolation contactor and pilot lights (not available with P3, L4, P6 or IS)
SA = Space heater w/transformer (Type 3R only)
K9 = Auxiliary contacts
IS = Isolation switch (cannot be used with P6 or MI)

Standard Onboard Communications

RS-485 Communications

BACnet MS/TP = Master slave/token protocol (Universal BACnet) RS-485
Modbus RTU RS-485, ASCII or RTU, remote terminal unit 32 nodes
N2 = Johnson Controls Metasys N2 network

Onboard Ethernet-Based Communications (port left side of keypad)

BACnet/IP Ethernet industrial protocol
Modbus/TCP Transmission control protocol (Ethernet-based)

Certified Major Component Summary
H-Max, Intellipass and IntelliDisconnect Drives

Certified Enclosures[1]							
Type	Frame Size	NEMA Enclosure Rating[2]	Maximum Dimensions			Manufacturer	Unit Under Test
			Width (in.)	Depth (in.)	Height (in.)		
H-Max (HMX)	4	1	5	7.75	13.25	Eaton	2
		1,12	5.04	7.77	12.89		Interpolated
	5	1,12	5.67	8.73	16.5	Eaton	Interpolated
							Interpolated
	6	1,12	7.68	9.29	21.93	Eaton	Interpolated
							Interpolated
	7	1,12	9.06	10.49	25.98	Eaton	Interpolated
							Interpolated
	8	1,12	11.42	13.76	38.02	Eaton	Interpolated
							Interpolated
	9	1,12	18.9	14.63	45.28	Eaton	Interpolated
		12	19	15	45.5		3
H-Max (HMX) Intellipass and IntelliDisconnect	4	1	7.5	12	31	Eaton	4
		1,12	7.9	12.5	31		Interpolated
		1,12	7.9	12.5	31		Interpolated
	5	1,12	9.6	15.3	38.31	Eaton	Interpolated
							Interpolated
							Interpolated
	6	1,12	11.4	15.8	46.4	Eaton	Interpolated
		1,12	11.4	15.8	46.4		Interpolated
		1	11.5	16	46.5		5
	7	1,12	14.42	15.6	59.46	Eaton	Interpolated
		1,12	14.42	15.6	59.46		Interpolated
		1	14.5	16.5	59.5		6

1. All enclosures made from low carbon steel.
2. Type 12 enclosures include gasketing for ingress protection.

Manual Motor Protectors (MMP), Model Line XTPR/HFDMP								
Model	Maximum Voltage	Continuous Rating (Amps)	Maximum Dimensions/Weight				Manufacturer	Unit Under Test
			Width (in.)	Depth (in.)	Height (in.)	Weight (lbs)		
XTPR012BC1	480	12	1.77	3.7	3.66	0.66	Eaton	4
XTPR032DC1	208	32	2.17	5.71	5.57	2.65	Eaton	Interpolated
XTPR058DC1	480	58	2.17	5.71	5.57	2.65	Eaton	5
HFDMP3100JL	480	100	4.13	3.38	6	4.5	Eaton	6

Certified Major Component Summary
H-Max, Intellipass and IntelliDisconnect Drives

Certified Contactors, Model Line XTCE								
Model	Maximum Voltage	Continuous Rating (Amps)	Maximum Dimensions/Weight				Manufacturer	Unit Under Test
			Width (in.)	Depth (in.)	Height (in.)	Weight (lbs)		
XTCE009B10TD	480	12	1.77	2.96	2.68	0.51	Eaton	4
XTCE032C10TD	480	32	1.77	3.84	3.46	0.93	Eaton	Interpolated
XTCE065D00TD	480	65	2.17	4.48	5.77	2.1	Eaton	5
XTCE115G00TD	480	115	3.54	5.59	6.69	4.41	Eaton	6

Certified Power Supplies, Model Line PSG						
Model	Maximum Dimensions/Weight				Manufacturer	Unit Under Test
	Width (in.)	Depth (in.)	Height (in.)	Weight (lbs)		
PSG60E	1.26	4.73	4.76	0.815	Eaton	4
						Interpolated
PSG60F	2.76	4.67	4.76	1.23		Interpolated
PSG60E	1.26	4.73	4.76	0.815	Eaton	Interpolated
						Interpolated
PSG60F	2.76	4.67	4.76	1.23		Interpolated
PSG60E	1.26	4.73	4.76	0.815	Eaton	Interpolated
						Interpolated
PSG60F	2.76	4.67	4.76	1.23		5
PSG120E	1.98	4.52	4.76	1.2	Eaton	Interpolated
						Interpolated
PSG120F	2.75	4.65	7.76	1.6		6

Certified Drives, Model Line HMX (H-Max)									
Frame Size	Voltage	HP	Model	Maximum Dimensions/Weight				Manufacturer	Unit Under Test
				Width (in.)	Depth (in.)	Height (in.)	Weight (lbs)		
4	208	7.5	HMX32- FS4	5.04	7.77	12.89	13.2	Eaton	4
	230	1-3	HMX34- FS4						Interpolated
	480	1-3							2
5	208	5-10	HMX32- FS5	5.67	8.73	16.5	22	Eaton	Interpolated
	230	5-10							Interpolated
	480	10-20	HMX34- FS5						Interpolated
6	208	15-20	HMX32- FS6	7.68	9.29	21.93	44.1	Eaton	Interpolated
	230	15-20							Interpolated
	480	40	HMX34- FS6						5
7	208	25-30	HMX32- FS7	9.06	10.49	25.98	82.6	Eaton	Interpolated
	230	25-40							Interpolated
	480	75	HMX34- FS7						6
8	208	50-75	HMX32- FS8	11.42	13.76	38.02	154.3	Eaton	Interpolated
	230	50-75							Interpolated
	480	100-150	HMX34- FS8						Interpolated
9	208	100-120	HMX32- FS9	18.9	14.63	33.09	262	Eaton	Interpolated
	230	100-120							Interpolated
	480	250	HMX34- FS9						3

Powering Business Worldwide

H-Max, Intellipass and Intellidisconnect Drives
Resonant Frequency Summary

Report	UUT	Front to Back (Hz)	Side to Side (Hz)	Vertical (Hz)
70566R12	2	N/A*	N/A*	N/A*
70566R12	3	N/A*	N/A*	N/A*
70566R12	4	N/A*	N/A*	N/A*
70566R12	5	N/A*	N/A*	N/A*
70566R12	6	N/A*	N/A*	N/A*

* - UUT rigidly mounted to wall fixture.

UUT 2 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: LV Adjustable Frequency Drives

Model Number: H-Max Enclosed Drive (HMX34AG01221-N), Frame 4

Product Construction Summary: Cabinet constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating.

Options/Component Summary: Frame 4 Drive 480 Vac (HMX34-FS4)

UUT Properties (As Tested)								
Weight (lbs.)	Enclosure Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Width	Depth	Height	Front-Back		Side-Side		Vertical
14	5	7.75	13.25	N/A		N/A		N/A
Seismic Test Parameters								
Building Code	**Test Criteria**	**Sds**	**z/h**	**Ip**	**Aflx-H**	**Arig-H**	**Aflx-V**	**Arig-V**
CBC 2013	2012 ICC-ES AC156	3.12	1	1.5	4.99	3.74	2.09	0.84

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

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

UUT 3 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: LV Adjustable Frequency Drives

Model Number: H-Max Enclosed Drive (HMX34AG31022-N), Frame 9

Product Construction Summary: Cabinet constructed of powder-coated carbon steel, NEMA Type 12 enclosure rating.

Options/Component Summary: Frame 9 Drive 480 Vac (HMX34-FS9)

UUT Properties (As Tested)								
Weight (lbs.)	Enclosure Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Width	Depth	Height	Front-Back		Side-Side		Vertical
262	19	15	45.5	N/A		N/A		N/A
Seismic Test Parameters								
Building Code	**Test Criteria**	**Sds**	**z/h**	**Ip**	**Aflx-H**	**Arig-H**	**Aflx-V**	**Arig-V**
CBC 2013	2012 ICC-ES AC156	3.12	1	1.5	4.99	3.74	2.09	0.84

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

Unit was mounted to a rigid frame using (4) 3/8" bolts. The steel frame was welded to the shake table.

UUT 4 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: LV Adjustable Frequency Drives

Model/Model #: H-Max Intellipass and Intellidisconnect Drive (HMX01134NA), Frame 4

Product Construction Summary: Cabinet constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating.

Options/Component Summary: Manual Motor Protector (XTPR012BC1), Contactor (XTCE009B10TD), Power Supply (PSG60F), Drive (HMX34-FS4)

UUT Properties (As Tested)								
Weight (lbs.)	Enclosure Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Width	Depth	Height	Front-Back		Side-Side		Vertical
48	7.5	12	31	N/A		N/A		N/A
Seismic Test Parameters								
Building Code	**Test Criteria**	**Sds**	**z/h**	**Ip**	**Aflx-H**	**Arig-H**	**Aflx-V**	**Arig-V**
CBC 2013	2012 ICC-ES AC156	3.12	1	1.5	4.99	3.74	2.09	0.84

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

Unit was mounted to a rigid frame using (4) 3/8" bolts. The steel frame was welded to the shake table.

UUT 5 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: LV Adjustable Frequency Drives

Model Number: H-Max Intellipass and Intellidisconnect Drive (HMX05234NA), Frame 6

Product Construction Summary: Cabinet constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating.

Options/Component Summary: Manual Motor Protector (XTPR05BDC1), Contactor (XTCE065D00TD), Power Supply (PSG60F), Drive (HMX34-FS6)

UUT Properties (As Tested)								
Weight (lbs.)	Enclosure Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Width	Depth	Height	Front-Back		Side-Side		Vertical
120	11.5	16	46.5	N/A		N/A		N/A
Seismic Test Parameters								
Building Code	**Test Criteria**	**Sds**	**z/h**	**Ip**	**Aflx-H**	**Arig-H**	**Aflx-V**	**Arig-V**
CBC 2013	2012 ICC-ES AC156	3.12	1	1.5	4.99	3.74	2.09	0.84

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

Unit was mounted to a rigid frame using (4) 3/8" bolts. The steel frame was welded to the shake table.

UUT 6 (Unit Under Test) Summary Sheet

Manufacturer: Eaton Corporation

Product Line: LV Adjustable Frequency Drives

Model Number: H-Max Intellipass and Intellidisconnect Drive (HMX09634NA), Frame 7

Product Construction Summary: Cabinet constructed of powder-coated carbon steel, NEMA Type 1 enclosure rating.

Options/Component Summary: Manual Motor Protector (HFDMP3100JL), Contactor (XTCE115G00TD), Power Supply (PSG120F), Drive (HMX34-FS7)

UUT Properties (As Tested)								
Weight (lbs.)	Enclosure Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Width	Depth	Height	Front-Back		Side-Side		Vertical
194	14.5	16.5	59.5	N/A		N/A		N/A
Seismic Test Parameters								
Building Code	**Test Criteria**	**Sds**	**z/h**	**Ip**	**Aflx-H**	**Arig-H**	**Aflx-V**	**Arig-V**
CBC 2013	2012 ICC-ES AC156	3.12	1	1.5	4.99	3.74	2.09	0.84

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

Unit was mounted to a rigid frame using (4) 3/8" bolts. The steel frame was welded to the shake table.