



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

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

OFFICE USE ONLY

APPLICATION #: **OSP – 0008 – 10**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Eaton Corporation

Manufacturer's Technical Representative: Eddie Wilkie

Mailing Address: 175 Vista Blvd., Arden, NC 28704

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

Product Information

Product Name: DS-3, DT-3, KS and KT Ventilated Transformers; EP and EPT Encapsulated Transformers

Product Type: Dry Type Low Voltage Distribution Transformers, 600V

Product Model Number: DS-3, DT-3, KS, KT, EP, EPT

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

General Description: Low Voltage Dry Type Distribution Transformers, 600V Maximum, Copper and Aluminum

Windings, Ventilated (NEMA Type 2 and 3R) and Encapsulated (NEMA Type 3R, 4 and 12). Seismic enhancements made to the test units and modifications required to address anomalies observed during tests shall be incorporated into the production units.

Mounting Description: Rigid floor mounted or rigid wall mounted.

Applicant Information

Applicant Company Name: Eaton Corporation

Contact Person: Eddie Wilkie

Mailing Address: 175 Vista Blvd., Arden, NC 28704

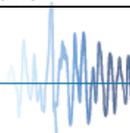
Telephone: 828-651-0707 Email: eddiwilkie@eaton.com

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: 1/24/13

Title: Engineering Manager Company Name: Eaton Corporation

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dvnamic 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 Seismic Bracing

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

Mailing Address: 1020 Crews Rd. Suite 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): _____

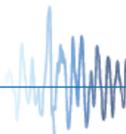
Testing Laboratory

Company Name: Wyle Laboratories

Contact Name: Phil McNaught

Mailing Address: PO Box 77777, Huntsville, AL 35807

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





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

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

Design Basis of Equipment or Components (Fp/Wp) = [] Encapsulated Fir Mounted = 2.09, Encapsulated Wall Mounted = 1.68
[] Ventilated Dry Type Fir Mounted = 1.53, Ventilated Dry Type Wall Mounted = 2.15

S_DS (Design spectral response acceleration at short period, g) = [] Encapsulated Fir Mounted = 2.90, Encapsulated Wall Mounted = 2.33
[] Ventilated Dry Type Fir Mounted = 2.12, Ventilated Dry Type Wall Mounted = 2.99

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

Rp (Equipment or component response modification factor) = 2.5

Omega_0 (System overstrength factor) = 2.5

Ip (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 [X] 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) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (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 [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [] Drawings [] Calculations [X] Manufacturer's Catalog

[X] Other(s) (Please Specify): Product Range Summary

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

Signature: [Signature] Date: March 14, 2013

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_DS (g) = See Above z/h = 1.0

Condition of Approval (if applicable):





Certified Product Range Summary
Ventilated/Non-Ventilated Dry Type Distribution Transformers⁵
Rigid Floor Mounted

Manufacturer: Eaton Corporation
Model Line: Types DS-3, DT-3, KS-4, KS-9, KS-13, KS-20, KS-30, KS-40, KS-50, KT-4, KT-9, KT-13, KT-20, KT-30, KT-40, KT-50
Certified Product Construction Summary: NEMA 2 and NEMA 3R ventilated enclosure and NEMA 3R non-ventilated.
Certified Options Summary: 1-Phase and 3-phase air-cooled windings. Aluminum or copper windings.
Certified Mounting Summary: Rigid Floor-mounted
 Building Code: CBC 2013

Model Line	# of Phases	Size (kVA)	Enclosure ⁶ Dimensions (in)			Weight Maximum (lbs.) Al [Cu]	S _{DS} (g)	NEMA Enclosure Type ⁷	UUT Identifier	Testing Status by Winding Material		
			Width	Depth	Height					Cu	Al	
DS-3, DS-3E ¹ , KS-4 ² , KS-9 ² , KS-13 ² , KS-20 ² , KS-30 ² , KS-40 ² , KS-50 ²	1	5	16.87	15.82	30.25	180 [210]		2, 3R		*	*	
		7.5	22.59	19.5	37.53	190 [349]		2, 3R		*	*	
		9	22.59	19.5	37.53	320 [460]		2, 3R		*	*	
		10	22.59	19.5	37.53	325 [465]		2, 3R		*	*	
		15	22.59	19.5	37.53	380 [470]		2, 3R		*	*	
		20	24	23.38	42.03	380 [610]		2, 3R		*	*	
		22.5	22.87	20.36	37.59	390 [610]		2, 3R		*	*	
		25	24	23.38	42.03	570 [610]		2, 3R		*	*	
		30	24	23.38	42.03	570 [700]		2, 3R		*	*	
		37.5	24	23.38	42.03	650 [940]		2, 3R		*	*	
		40	24	23.38	42.03	650 [940]		2, 3R		*	*	
		45	24	23.38	42.03	650 [940]		2, 3R		*	*	
		50	29.97	33.97	62.91	925 [1730]		2, 3R		*	*	
		75	29.97	33.97	62.91	1200 [1520]		2, 3R		*	*	
		100	29.97	33.97	62.91	1275 [1850]		2, 3R		*	*	
		150	29.97	33.97	62.91	1600 [1800]		2, 3R		*	*	
167	29.97	33.97	62.91	1600 [1800]		2, 3R		*	*			
DT-3, DT-3E ³ , KT-4 ⁴ , KT-9 ⁴ , KT-13 ⁴ , KT-20 ⁴ , KT-30 ⁴ , KT-40 ⁴ , KT-50 ⁴	3	5	20.25	14.5	25.25	156	2.12	2	MD05D92BES (DT-3)		UUT 7	
		5	23	16.5	33	168 [204]		2, 3R		*	^	
		6	23	16.5	33	168 [204]		2, 3R		*	^	
		7.5	23	16.5	33.25	430 [640]		2, 3R		*	^	
		9	23	16.5	33.25	430 [640]		2, 3R		*	^	
		10	23	18.39	33	430 [640]		2, 3R		*	^	
		11	23	18.39	33	430 [640]		2, 3R		*	^	
		14	23	18.39	33	430 [640]		2, 3R		*	^	
		15	29	22	42.25	430 [640]		2, 3R		*	^	
		20	29	22	42.25	440 [650]		2, 3R		*	^	
		22.5	23	20.36	40.53	440 [650]		2, 3R		*	^	
		25	23	32.84	42.03	580 [850]		2, 3R		*	^	
		27	23	32.84	42.03	590 [910]		2, 3R		*	^	
		30	29	23.84	42.18	590 [990]		2, 3R		*	^	
		34	24.22	23.84	42.02	605 [990]		2, 3R		*	^	
		37.5	24.22	23.84	42.02	605 [990]		2, 3R		*	^	
		40	28.19	23.39	48.56	620 [990]		2, 3R		*	^	
		45	23.5	17	30.25	(510)	2.12	2	H48M28T45CUEELS42 (KT-4)		UUT 39	
		45	28.19	23.39	48.56	620 [1300]		2, 3R		^	^	
		50	29.97	33.97	62.88	1240 [1900]		2, 3R		^	^	
		51	30.61	33.97	62.88	1240 [1900]		2, 3R		^	^	
		60	30.61	33.97	62.88	1240 [2100]		2, 3R		^	^	
		63	30.61	33.97	62.88	1240 [2100]		2, 3R		^	^	
		75	30.61	33.97	62.88	1240 [2100]		2, 3R		^	^	
		80	29.97	33.97	62.91	1250 [2400]		2, 3R		^	^	
		93	29.97	33.97	62.91	1250 [2400]		2, 3R		^	^	
		100	29.97	33.97	62.91	1250 [2400]		2, 3R		^	^	
		112.5	36.72	32.5	62.18	1990 [2400]		2, 3R		^	^	
		112.5	29.75	21.75	39.5	[762]	2.12	3R	V44M31T12CU (DT-3)		UUT 25	
		118	36.72	32.5	62.18	1800 [4200]		2, 3R		^	^	
		125	36.72	32.5	62.18	1800 [4200]		2, 3R		^	^	
		145	36.72	32.5	62.18	1800 [4200]		2, 3R		^	^	
		150	36.72	32.5	62.18	1800 [4200]		2, 3R		^	^	
		160	44.46	36.44	71.5	1800 [4200]		2, 3R		^	^	
		167	44.46	36.44	71.5	1800 [4200]		2, 3R		^	^	
		175	44.46	36.44	71.5	2416 [4200]		2, 3R		^	^	
		220	44.46	36.44	71.5	2416 [4200]		2, 3R		^	^	
		225	44.46	36.44	71.5	2416 [4200]		2, 3R		^	^	
		250	44.46	36.44	71.5	2416 [4500]		2, 3R		^	^	
		275	44.46	36.44	71.5	2416 [4500]		2, 3R		^	^	
		300	44.46	36.44	71.5	2416 [4500]		2, 3R		^	^	
330	44.46	36.44	71.5	2416 [4683]		2, 3R		^	^			
350	44.46	36.44	71.5	2416 [4683]		2, 3R		^	^			
400	44.46	36.44	71.5	2416 [4683]		2, 3R		^	^			
440	44.75	42.75	71.5	2416 [4683]		2, 3R		^	^			
500	45	36.5	68.5	2416 [4683]		2, 3R		^	^			
500	45	36.5	68.5	2416	2.12	2	V48D28T55EE (DT-3)			UUT 10		
500	44.75	42.75	71.5	[4683]	2.12	2	H48M28F55CUEE-UUT (KT-4)		UUT 11b			

^ = Interpolated
 * = Extrapolated
 1. DS-3E construction similar to DS-3 except enclosure is non ventilated.
 2. Construction for DS and KS models are identical. Variation is limited to the electrical and thermal ratings.
 3. DT-3E construction similar to DT-3 except enclosure is non ventilated.
 4. Construction for DT and KT models are identical. Variation is limited to the electrical and thermal ratings.
 5. Manufactured by Eaton
 6. All enclosures made from mild carbon steel.
 7. NEMA 3R includes additional drip shield.



Certified Product Range Summary
Ventilated Dry Type Distribution Transformers⁵
Rigid Wall Mounted

Manufacturer: Eaton Corporation
Model Line: Types DS-3, DT-3, KS-4, KS-9, KS-13, KS-20, KS-30, KS-40, KS-50, KT-4, KT-9, KT-13, KT-20, KT-30, KT-40, KT-50
Certified Product Construction Summary: NEMA 2 and NEMA 3R ventilated enclosure
Certified Options Summary: 1-Phase and 3-phase air-cooled windings. Aluminum or copper windings.
Certified Mounting Summary: Rigid Wall Mounted
 Building Code: CBC 2013

Model Line	# of Phases	Size (kVA)	Enclosure ⁶ Dimensions (in)			Weight	S _{DS} (g)	NEMA Enclosure Type ⁷	UUT Identifier	Testing Status by Winding Material		
			Width	Depth	Height	Maximum (lbs.) Al [Cu]				Cu	Al	
DS-3, DS-3E ¹ , KS-4 ² , KS-9 ² , KS-13 ² , KS-20 ² , KS-30 ² , KS-40 ² , KS-50 ²	1	5	16.87	15.82	30.25	[210]		2, 3R		*		
		7.5	22.59	19.5	37.53	[349]		2, 3R		*		
		9	22.59	19.5	37.53	[460]		2, 3R		*		
		10	22.59	19.5	37.53	[465]		2, 3R		*		
		15	22.59	19.5	37.53	[400]		2, 3R		*		
		20	22.59	19.5	37.53	[400]		2, 3R		*		
		22.5	22.59	19.5	37.53	[400]		2, 3R		*		
		25	22.59	19.5	37.53	[400]		2, 3R		*		
		30	22.59	19.5	37.53	[400]		2, 3R		*		
37.5	22.59	19.5	37.53	[425]		2, 3R		*				
DT-3, DT-3E ³ , KT-4 ⁴ , KT-9 ⁴ , KT-13 ⁴ , KT-20 ⁴ , KT-30 ⁴ , KT-40 ⁴ , KT-50 ⁴	3	5	23	16.5	33	[204]		2, 3R		*		
		6	23	16.5	33.25	[640]		2, 3R		*		
		7.5	23	16.5	33.25	[640]		2, 3R		*		
		9	23	16.5	33.25	[640]		2, 3R		*		
		10	23	18.39	33	[640]		2, 3R		*		
		11	23	18.39	33	[640]		2, 3R		*		
		14	23	18.39	33	[640]		2, 3R		*		
		15	20.75	27	41.25	[210]	2.99	2	V44M28T15CU (DT3)	UUT 8		
		15	29	22	42.25	[640]		2, 3R		^		
		20	29	22	42.25	[650]		2, 3R		^		
		22.5	23	20.36	40.53	[650]		2, 3R		^		
		25	23	32.84	42.03	[810]		2, 3R		^		
		27	23	32.84	42.03	[810]		2, 3R		^		
		30	29	23.84	42.18	[810]		2, 3R		^		
		34	24.22	23.84	42.02	[810]		2, 3R		^		
		35	24.22	23.84	42.02	[810]		2, 3R		^		
		37.5	24.22	23.84	42.02	[810]		2, 3R		^		
		40	28.19	23.39	48.56	[810]		2, 3R		^		
		45	28.19	23.39	48.56	[810]		2, 3R		^		
		50	29.97	33.97	62.88	[810]		2, 3R		^		
		51	30.61	33.97	62.88	[810]		2, 3R		^		
		60	30.61	33.97	62.88	[810]		2, 3R		^		
		63	30.61	33.97	62.88	[810]		2, 3R		^		
		75	29.5	26.75	55	714	2.99	2	H48M28B75EELS47 (KT-4)		UUT 40	
75	29.5	26.75	55	714 [810]		2, 3R		^	^			
93	29.97	33.97	62.91	[810]		2, 3R		^				
100	29.97	33.97	62.91	[810]		2, 3R		^				
112.5	29.5	28	55	[810]		2, 3R		^				
112.5	29.5	28	55	[810]	2.99	2	V44M31T12CU (DT-3)	UUT 9				

^ = Interpolated
 * = Extrapolated

- DS-3E construction similar to DS-3 except enclosure is non ventilated.
- Construction for DS and KS models are identical. Variation is limited to the electrical and thermal ratings.
- DT-3E construction similar to DT-3 except enclosure is non ventilated.
- Construction for DT and KT models are identical. Variation is limited to the electrical and thermal ratings.
- Manufactured by Eaton
- All enclosures made from mild carbon steel.
- NEMA 3R includes additional drip shield.



**Certified Product Range Summary
Encapsulated Transformers¹
Rigid Floor Mounted**

Manufacturer: Eaton Corporation
Model Line: Types EP and EPT Transformers
Certified Product Construction Summary: NEMA 3R, NEMA 4, or NEMA 12 encapsulated (potted) enclosure
Certified Options Summary: 1-Phase and 3-phase encapsulated (potted) windings. Aluminum or copper windings.
Certified Mounting Summary: Rigid Floor Mounted.
 Building Code: CBC 2013

Model Line	# of Phases	Size (kVA)	Enclosure ² Dimensions (in)			Weight	S _{DS} (g)	NEMA Enclosure Type ³	UUT Identifier	Testing Status by Winding Material	
			Width (max)	Depth (max)	Height (max)	Maximum (lbs.) Al [Cu]				Cu	Al
EP	1	3	16.93	10.01	12.82	230		3R, 4, 12			*
		4	19.59	10.52	15.82	240		3R, 4, 12			*
		5	29.68	10.01	12.06	240		3R, 4, 12			*
		6	20	10.52	15.82	375		3R, 4, 12			*
		7.5	20	10.52	15.82	380		3R, 4, 12			*
		9	20	10.52	15.82	500		3R, 4, 12			*
		10	20	14.12	15.82	350		3R, 4, 12			*
		15	24.81	14.66	26.75	615		3R, 4, 12			*
		22.5	24.81	14.66	26.75	698		3R, 4, 12			*
		25	24.81	14.66	26.75	698		3R, 4, 12			*
EPT	3	3	16.93	10.01	12.82	230		3R, 4, 12			*
		5	19.59	10.52	15.82	240		3R, 4, 12			*
		6	29.68	10.01	12.06	375		3R, 4, 12			*
		9	29.68	10.52	15.82	500		3R, 4, 12			*
		15	29.68	14.12	25.5	615		3R, 4, 12			*
		30	24.81	14.66	28.24	850		3R, 4, 12			*
		30	25.25	12.75	26.75	528	2.90	3R	Y38M28T30N		UUT 44
		45	30.29	15.68	32.06	1312		3R, 4, 12			^
		75	30.5	15.88	32.38	1312 [1515]		3R, 4, 12			^
		75	30.5	15.88	32.38	[1515]	2.90	3R	Y39M28T75Y75034		UUT 12b
75	30.25	15.75	32.25	1312	2.90	3R	Y39M63T75X		UUT 14a		

^ = Interpolated
 * = Extrapolated

1. Manufactured by Eaton
2. All enclosures made from mild carbon steel.
3. NEMA 4 and 12 enclosures require gasket for cover seams.



Certified Product Range Summary
Encapsulated Transformers¹
Rigid Wall Mounted

Manufacturer: Eaton Corporation											
Model Line: Types EP and EPT Transformers											
Certified Product Construction Summary: NEMA 3R, NEMA 4, or NEMA 12 encapsulated (potted) enclosure											
Certified Options Summary: 1-Phase and 3-phase encapsulated (potted) windings. Aluminum or copper windings.											
Certified Mounting Summary: Rigid Wall Mounted											
Building Code: CBC 2013											
Model Line	# of Phases	Size (kVA)	Enclosure ² Dimensions (in)			Weight	S _{DS} (g)	NEMA Enclosure Type ³	UUT Identifier	Testing Status by Winding Material	
			Width (max)	Depth (max)	Height (max)	Maximum (lbs.) Al [Cu]				Cu	Al
EP	1	0.05	4.25	4.25	9.25	[7.75]	2.33	3R	S10N04A81N	UUT 11a	N/A
		0.075	4.61	4.06	6.36	[9]		3R, 4, 12		^	N/A
		0.1	4.61	4.06	6.36	[10]		3R, 4, 12		^	N/A
		0.15	4.61	4.06	6.36	[15]		3R, 4, 12		^	N/A
		0.25	4.61	5.18	8.62	[20]		3R, 4, 12		^	N/A
		0.5	5.73	5.99	8.62	[35]		3R, 4, 12		^	N/A
		0.75	5.73	5.99	10.75	[50]		3R, 4, 12		^	N/A
		1	6.1	6.56	10.75	(55)		3R, 4, 12		^	N/A
		1.5	7.69	8	11.06	[75]		3R, 4, 12		^	N/A
		2	7.69	8	11.06	[80]		3R, 4, 12		^	N/A
		3	16.93	10.01	12.82	[420]		3R, 4, 12		^	
		4	19.59	10.52	15.82	[440]		3R, 4, 12		^	
		5	29.68	10.01	12.06	[440]		3R, 4, 12		^	
		6	20	10.52	15.82	[480]		3R, 4, 12		^	
		7.5	20	10.52	15.82	[570]		3R, 4, 12		^	
		9	20	10.52	15.82	[580]		3R, 4, 12		^	
		10	20	14.12	15.82	[430]		3R, 4, 12		^	
		15	24.81	14.66	26.75	[650]		3R, 4, 12		^	
22.5	24.81	14.66	26.75	[818]		3R, 4, 12		^			
25	24.81	14.66	26.75	[818]		3R, 4, 12		^			
37.5	30.29	15.68	32.06	[818]		3R, 4, 12		^			
EPT	3	3	16.93	10.01	12.82	[420]		3R, 4, 12		^	
		5	19.59	10.52	15.82	[440]		3R, 4, 12		^	
		6	29.68	10.01	12.06	[480]		3R, 4, 12		^	
		9	29.68	10.52	15.82	[580]		3R, 4, 12		^	
		15	28.25	15	26.75	[650]		3R, 4, 12		^	
		15	20.25	10.63	17.5	[300]	2.33	3R	Y38D37T15CU	13	
		30	28.25	15	26.75	[818]		3R, 4, 12		^	
		45	28.25	15	26.75	698 [818]		3R, 4, 12		^	^
		45	28.25	14.75	26.75	[818]	2.33	3R	Y48M28T45CU	UUT 12a	
45	28.25	15	26.75	698	2.33	3R	Y45001		UUT 15		

^ = Interpolated

* = Extrapolated

1. Manufactured by Eaton

2. All enclosures made from mild carbon steel.

3. NEMA 4 and 12 enclosures require gasket for cover seams.



Powering Business Worldwide

Certified Enclosure Summary
Ventilated Dry Type and Encapsulated Transformers

Ventilated Dry Type ¹					
NEMA Enclosure Type	Dimensions (in.)			Specimen	Manufacturer
	Width	Depth	Height		
2	20.25	14.5	25.25	UUT 7	Eaton
2	20.25	27	41.25 ²	UUT 8	Eaton
2,3R	22.89	18.39	31.3	Interpolated	Eaton
2,3R	22.89	20.36	37.59	Interpolated	Eaton
2,3R	23	16.5	30	Interpolated	Eaton
2	23.5	17	30.25	UUT 39	Eaton
2,3R	24.22	23.84	42.03	Interpolated	Eaton
2,3R	24.22	23.84	42.03	Interpolated	Eaton
2,3R	28.22	23.42	48.56	Interpolated	Eaton
2,3R	29	22	39	Interpolated	Eaton
2,3R	29	22	39	Interpolated	Eaton
2	29.5	28	55 ²	UUT 9	Eaton
2	29.5	26.75	55 ²	UUT 40	Eaton
3R	29.75	21.75	39.5	UUT 25	Eaton
2,3R	29.97	33.97	62.91	Interpolated	Eaton
2,3R	29.97	33.97	62.91	Interpolated	Eaton
2,3R	31.44	24.67	56.17	Interpolated	Eaton
2,3R	31.44	30.68	62.18	Interpolated	Eaton
2,3R	36.69	32.65	57.54	Interpolated	Eaton
2	44.75	42.75	71.5	UUT 11b	Eaton
2	45	36.5	68.5	UUT 10	Eaton

Encapsulated ¹					
NEMA Enclosure Type	Dimensions (in.)			Specimen	Manufacturer
	Width	Depth	Height		
3R, 4,12	4.11	4	8.91	Extrapolated	Eaton
3R	4.25	4.25	9.25	UUT 11a	Eaton
3R, 4,12	4.87	4.06	8.97	Interpolated	Eaton
3R, 4,12	4.87	4.91	8.97	Interpolated	Eaton
3R, 4,12	5.99	5.75	11.28	Interpolated	Eaton
3R, 4,12	5.99	5.75	11.28	Interpolated	Eaton
3R, 4,12	6.37	6.52	13.41	Interpolated	Eaton
3R, 4,12	6.37	6.52	13.41	Interpolated	Eaton
3R, 4,12	7.69	8	14.25	Interpolated	Eaton
3R, 4,12	9.34	5.18	9.34	Interpolated	Eaton
3R, 4,12	10.38	9.89	16	Interpolated	Eaton
3R, 4,12	10.38	9.89	216	Interpolated	Eaton
3R, 4,12	11.68	5.99	11.68	Interpolated	Eaton
3R, 4,12	12.71	12.79	22.26	Interpolated	Eaton
3R, 4,12	12.71	12.79	25.26	Interpolated	Eaton
3R, 4,12	13.03	6.56	13.03	Interpolated	Eaton
3R, 4,12	13.38	10.52	19	Interpolated	Eaton
3R, 4,12	13.38	10.52	19	Interpolated	Eaton
3R, 4,12	13.78	6.32	13.78	Interpolated	Eaton
3R, 4,12	14.72	14.82	25.26	Interpolated	Eaton
3R, 4,12	15.93	8.26	13.4	Interpolated	Eaton
3R, 4,12	16.35	14.12	23.31	Interpolated	Eaton
3R, 4,12	16.35	14.12	26.31	Interpolated	Eaton
3R, 4,12	16.93	10.01	15.9	Interpolated	Eaton
3R, 4,12	16.93	10.01	15.9	Interpolated	Eaton
3R, 4,12	19.59	7.09	13.12	Interpolated	Eaton
3R, 4,12	20	10.52	17.38	Interpolated	Eaton
3R, 4,12	20	10.52	17.38	Interpolated	Eaton
3R	20.25	10.62	17.5	UUT 13	Eaton
3R, 4,12	20.67	13.59	20.67	Interpolated	Eaton
3R	25.25	12.75	26.75	UUT 44	Eaton
3R, 4,12	25.68	8.38	15.19	Interpolated	Eaton
3R, 4,12	26.58	14.66	28.15	Interpolated	Eaton
3R, 4,12	28.24	14.06	28.24	Interpolated	Eaton
3R	28.25	14.75	26.75	UUT 12a	Eaton
3R	28.25	15	26.75	UUT 15	Eaton
3R, 4,12	29.68	9.42	16.19	Interpolated	Eaton
3R	30.25	15.75	32.25	UUT 14a	Eaton
3R, 4,12	30.29	15.68	32.06	Interpolated	Eaton
3R	30.5	15.88	32.38	UUT 12b	Eaton

1. All enclosures made from mild carbon steel (CS).
2. Includes wall mounting bracket.



**Ventilated Dry and Encapsulated Transformer
Resonance Frequency Summary**

Report	UUT	OSP UUT Modelation	Front to Back (Hz)	Side to Side (Hz)	Vertical (Hz)
70282R12	7	7	18	20	45
70282R12	8	8	N/A*	N/A*	N/A*
70282R12	9	9	N/A*	N/A*	N/A*
70282R12	10	10	7.6	4.1	11
70282R12	11	11a	N/A*	N/A*	N/A*
70566R12	11	11b	4.6	5.1	24
70282R12	12	12a	N/A*	N/A*	N/A*
70566R12	12	12b	21	19	30
70566R12	13	13	N/A*	N/A*	N/A*
70282R12	14	14a	18	20	23
70566R12	15	15	N/A*	N/A*	N/A*
70566R12	25	25	7.8	5.8	23
70282R12	39	39	10.5	13	22
70282R12	40	40	N/A*	N/A*	N/A*
70282R12	44	44	32	20	23

* - UUT mounted rigidly to wall fixture.

UUT 7 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Floor Mounted Transformers

Model Number (Frame): MDO5D92BES (FR909)

Product Construction Summary: 5kVA, DT-3 Transformer, Floor Mounted, Aluminum Windings, 3-Phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
156	20.25	14.5	25.25	18	20	45

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	2.12	1	1.5	3.39	2.54	1.42	0.57

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



UUT 7 was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70282R12

UUT 8 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Wall Mounted Transformers

Model Number (Frame): V44M28T15CU (FR909)

Product Construction Summary: 15-kVA DT-3 Transformer, Wall Mounted, Copper Windings, 3-Phase.

Cabinet is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2. (Wall Mounting Bracket Kit, 7073C96G01)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
210	20.75	27	41.25	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	2.99	1	1.5	4.78	3.59	2.00	0.81

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



UUT 8 was mounted to a mild steel wall mounting Bracket using (4) 1/2" bolts. The wall brackets were secured to a rigid wall fixture using (6) 1/2" bolts.

70282R12

UUT 9 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Wall Mounted Transformers

Model Number (Frame): V44M31T12CU (FR915D)

Product Construction Summary: 112.5-kVA DT-3 Transformer, Wall Mounted, Copper Windings, 3-Phase.

Cabinet is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

(Wall Mounting Bracket Kit, 7073C96G01)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
810	29.5	28	55	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	2.99	1	1.5	4.78	3.59	2.00	0.81

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



UUT 9 was mounted to a mild steel wall mounting Bracket using (4) 1/2" bolts. The wall brackets were secured to a rigid wall fixture using (6) 1/2" bolts. The top of transformer was secured to the wall with (2) 3/8 bolts.

70282R12

UUT 10 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Floor Mounted Transformers

Model Number (Frame): V48D28T55EE (FR924)

Product Construction Summary: 500 kVA, DT-3 transformer, Floor Mounted, Aluminum Windings, 3-Phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
2416	45	36.5	68.5	7.6	4.1	11

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	2.12	1	1.5	3.39	2.54	1.42	0.57

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



UUT 10 was mounted to a rigid frame using (4) 5/8" bolts. The steel frame was welded to the shake table.

70282R12

UUT 11a Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Wall Mounted Transformers (EP)

Model Number (Frame): S10N04A81N (FR52)

Product Construction Summary: 50 VA, Type EP, Wall Mounted, Copper Windings, Single Phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
7.75	4.25	4.25	9.25	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	2.33	1	1.5	3.73	2.80	1.56	0.63

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



UUT 11a was mounted to a rigid frame using (3) 1/4" bolts. The steel frame was welded to the shake table.

70282R12

UUT 11b Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Floor Mounted Transformers

Model Number (Frame): H48M28F55CUEE-UUT (FR949)

Product Construction Summary: 500 kVA, Type KT-4, Floor Mounted, Copper Windings, 3-phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
4683	44.75	42.75	71.5	4.6	5.1	24

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	2.12	1	1.5	3.39	2.54	1.42	0.57

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



UUT 11b was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70566R12

UUT 12a Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Wall Mounted Transformers

Model Number (Frame): Y48M28T45CU (FR244)

Product Construction Summary: 45 kVA, EPT Transformer, Wall Mounted, Copper Windings, 3-phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
818	28.25	14.75	26.75	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	2.33	1	1.5	3.73	2.80	1.55	0.63

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



UUT 12a was mounted to a carbon steel wall mounting Bracket using (4) 1/2" bolts. The wall brackets were secured to a rigid wall fixture using (4) 1/2" bolts.

70282R12

UUT 12b Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Floor Mounted Transformers

Model Number (Frame): Y39M28T75Y75034 (FR245)

Product Construction Summary: 75 kVA, EPT Transformer, Floor Mounted, Copper Windings, 3-Phase.

Enclosure is constructed of powder-coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1515	30.5	15.88	32.38	21	19	30

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	2.90	1	1.5	4.64	3.48	1.943	0.78

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



UUT 12b was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70566R12

UUT 13 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Wall Mounted Transformers

Model Number (Frame): Y38D37T15CU (FR95)

Product Construction Summary: 15-kVA, EPT Transformer, Wall Mounted, Copper Windings, 3-Phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
300	20.25	10.63	17.5	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	2.33	1	1.5	3.73	2.80	1.56	0.63

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



UUT 13 was mounted to a rigid wall fixture using 4 (3/8)" bolts.

70566R12

UUT 14a Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Floor Mounted Transformers

Model Number (Frame): Y39M63T75X (FR245)

Product Construction Summary: 75 kVA, EPT Transformer, Floor Mounted, Aluminum Windings, 3-phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

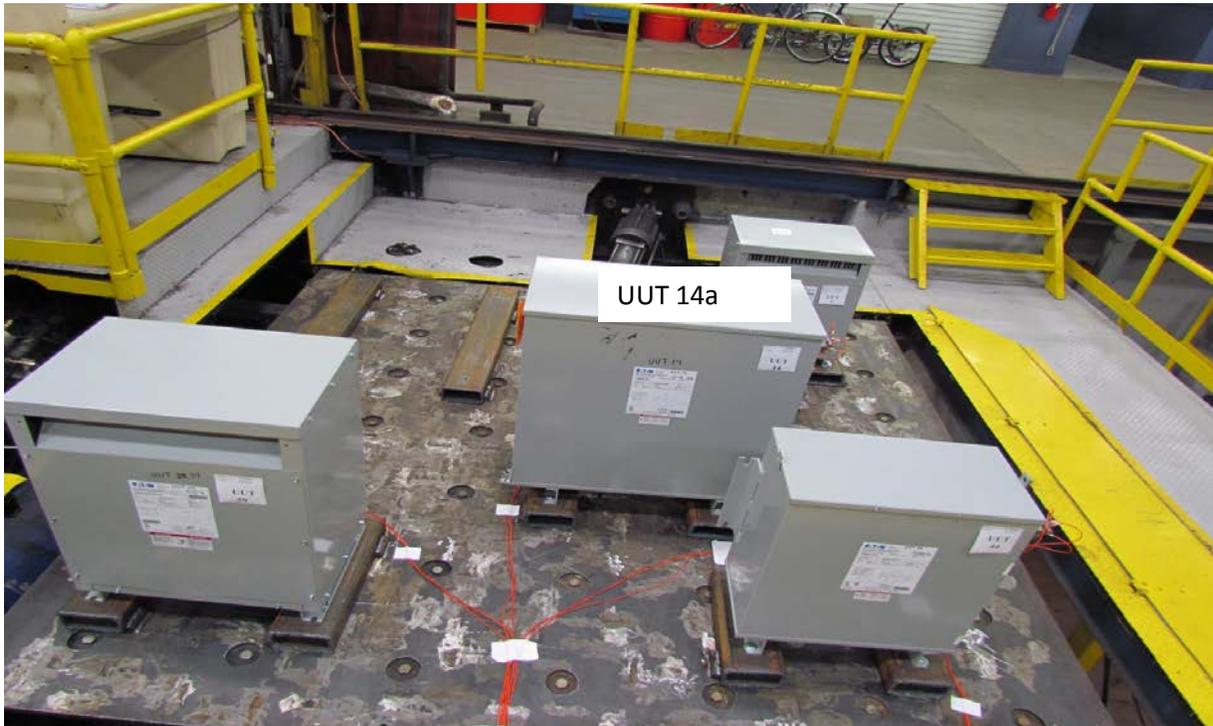
UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
1312	30.25	15.75	32.25	18	20	23

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	2.90	1	1.5	4.64	5.57	1.94	0.78

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



UUT 14a (center) was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70282R12

UUT 15 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Wall Mounted Transformers

Model Number (Frame): Y45001 (FR244)

Product Construction Summary: 45-kVA, EPT Transformer, Wall Mounted, Aluminum Windings, 3-Phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
698	28.25	15	26.75	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	2.33	1	1.5	3.73	2.80	1.56	0.63

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



UUT 15 was mounted to a rigid wall fixture using 4 (3/8)" bolts.

70566R12

UUT 25 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Floor Mounted Transformers

Model Number (Frame): V44M31T12CU (FR915D)

Product Construction Summary: 112.5 kVA, DT-3 Transformer, Floor Mounted, Copper Windings, 3-Phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
762	29.75	21.75	39.5	7.8	5.8	23

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	2.12	1	1.5	3.39	2.54	1.42	0.57

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



UUT 25 was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70566R12

UUT 39 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Floor Mounted Transformers

Model Number (Frame): H48M28T45CUEELS42 (FR912B)

Product Construction Summary: 45 kVA, KT-4 Transformer, Floor Mounted, Copper Windings, 3-Phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
510	23.5	17	30.25	10.5	13	22

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	2.12	1	1.5	3.39	2.54	1.42	0.57

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



UUT 39 (left) was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70282R12

UUT 40 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Ventilated Dry Type, Wall Mounted Transformers

Model Number (Frame): H48M28B75EELS47 (FR915D)

Product Construction Summary: 75 kVA, KT-4 Transformer, Wall Mounted, Aluminum Windings, 3-phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 2.

(Wall Mounting Bracket Kit, 7073C96G01)

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
714	29.5	26.75	55	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	2.99	1	1.5	4.78	3.59	2.00	0.81

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



UUT 40 was mounted to a mild steel wall mounting Bracket using (4) 1/2" bolts. The wall brackets were secured to a rigid wall fixture using (6) 1/2" bolts. The top of transformer was secured to the wall with (2) 3/8 bolts.

70282R12

UUT 44 Summary Sheet

Manufacturer: Eaton Corporation

Product Line: Encapsulated, Floor Mounted Transformers

Model Number (Frame): Y38M28T30N (FR243)

Product Construction Summary: 30 kVA, EPT Transformer, Floor Mounted, Aluminum Windings, 3-Phase.

Enclosure is constructed of powder coated carbon steel.

Options/Component Summary: NEMA Enclosure Type 3R.

UUT Properties (As Tested)

Weight (lbs.)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Width	Depth	Height	Front-Back	Side-Side	Vertical
528	25.25	12.75	26.75	32	20	23

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	2.90	1	1.5	4.64	3.48	1.94	0.78

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



UUT 44 (left) was mounted to a rigid frame using (4) 1/2" bolts. The steel frame was welded to the shake table.

70282R12