



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

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

OFFICE USE ONLY

APPLICATION #: **OSP – 0334 – 10**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Emerson Network Power

Manufacturer's Technical Representative: Jeff Herring

Mailing Address: 975 Pittsburgh Drive, Delaware, OH 43015

Telephone: (740) 833-8540 Email: Jeff.Herring@emerson.com

Product Information

Product Name: Liebert NX 480V UPS

Product Type: Uninterruptable Power Supply

Product Model Number: 38S UPS (225kVA-600kVA)

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

This product line includes uninterruptable power supplies (UPS). All units are rigid floor mounted.

General Description: The UPS include side panels. This OSP is not valid with snubbers or isolators.

Seismic enhancement 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 Floor Mounted

Applicant Information

Applicant Company Name: Emerson Network Power

Contact Person: Jeff Herring

Mailing Address: 975 Pittsburgh Drive, Delaware, OH 43015

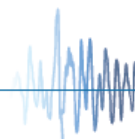
Telephone: (740) 833-8540 Email: Jeff.Herring@emerson.com

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: *Jeff Herring* Date: 4/19/2013

Title: Senior Design Engineer Company Name: Emerson Network Power

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





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

Company Name: Buehler & Buehler Structural Engineers Inc
Name: Scott Hooker S.E. California License Number: S3937
Mailing Address: 600 Q Street, Suite 200, Sacramento, CA 95811
Telephone: (916) 443-0303 Email: shooker@bbse.com

Supports and Attachments Preapproval

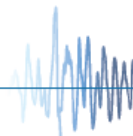
- Supports and attachments are preapproved under OPM- _____
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- Supports and attachments are not preapproved

Certification Method

- Testing in accordance with: ICC-ES AC156
- Other (Please Specify): _____

Testing Laboratory

Company Name: Qualtech NP
Contact Name: Dan Mikow
Mailing Address: 4600 East Tech Drive, Cincinnati, OH 45245
Telephone: (513) 528-7900 Email: dmikow@curtisswright.com





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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) = 1.63

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

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

R_p (Equipment or component response modification factor) = 2.5

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 Table 3

Overall dimensions and weight (or range thereof) = See Table 1

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): Operability Test Witness Letters

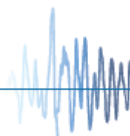
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature:  Date: June 25, 2013

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.27 z/h = 1.0

Condition of Approval (if applicable): _____





Special Seismic Certification
OSHPD Preapproval
Liebert NX UPS Systems



Table 1. Certified Models and Configurations - UPS
Liebert NX

Model Number	Description	Type	Input/ Output Voltage	Tested/ Interpolated ³	Enclosure Type ¹	Width (in)	Depth (in)	Height (in)	Maximum Weight (lbs)	Fp/Wp ²	Sds	z/h
38SA225	225kVA UPS	SMS	480	Extrapolated	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SN225	225kVA UPS	1+N	480	Extrapolated	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SA250	250kVA UPS	SMS	480	Extrapolated	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SN250	250kVA UPS	1+N	480	Extrapolated	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SA300	300kVA UPS	SMS	480	UUT-7	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SN300	300kVA UPS	1+N	480	Interpolated	Cold formed carbon steel; NEMA-1	53.4	33.7	78.3	2,450	1.63	2.27	1.00
38SA400	400kVA UPS	SMS	480	Interpolated	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00
38SN400	400kVA UPS	1+N	480	Interpolated	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00
38SA500	500kVA UPS	SMS	480	Interpolated	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00
38SN500	500kVA UPS	1+N	480	Interpolated	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00
38SA600	600kVA UPS	SMS	480	Interpolated	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00
38SN600	600kVA UPS	1+N	480	UUT-8	Cold formed carbon steel; NEMA-1	90.7	33.7	78.3	4,450	1.63	2.27	1.00

Types:

SMS = Single Module System
1+N - Distributed Static Switch System

Notes:

1. Enclosure manufactured by Emerson Network Power
2. $a_p = 1.0$; $R_p = 2.5$; $I_p = 1.5$
3. See Table 5: Nomenclature, regarding software derating of base units



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 Liebert NX UPS Systems



Table 2. Certified Subcomponents

Liebert NX

Fan & Motor Assembly				
Material	Description	Manufacturer	Part No.	Included in Test
Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/ carbon steel motor	Fan, 230V, 150MM	EBM-PAPST	W2S130-AA03-01	UUT-7, 8
Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/ carbon steel motor	Fan, 230V, 150MM	Fandis	A17M23SWBM00	UUT-7, 8

Transformer				
Material	Description	Manufacturer	Part No.	Included in Test
Carbon Steel/Copper	Fan Supply Transformers	Falco Electronics	T53002	UUT-7, 8
Carbon Steel/Copper	Shunt Trip Transformers	Falco Electronics	T42003	UUT-7, 8

Capacitor				
Material	Description	Manufacturer	Part No.	Included in Test
Carbon Steel/Electrolytic	DC Capacitors	Epcos	B43584S5478M3	UUT-7, 8

Inductor				
Material	Description	Manufacturer	Part No.	Included in Test
Carbon Steel/Copper	AC Input Choke (LIN)	Falco Electronics	T52C18	UUT-7, 8
Carbon Steel/Copper	AC Output Choke (LOUT)	Tamura	ET8722	UUT-7, 8



Special Seismic Certification
OSHPD Preapproval
Liebert NX UPS Systems



Table 2. Certified Subcomponents ~ con't

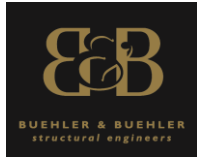
Liebert NX

Fuse				
Material	Description	Manufacturer	Part No.	Included in Test
Molded Plastic/Copper	Fuse, 700A/690V	Cooper Bussman	170M6461	UUT-7
Molded Plastic/Copper	Fuse, 700A/690V	Siba	2068132.7	UUT-7 ¹
Molded Plastic/Copper	Fuse, 1100A/690V	Cooper Bussman	170M6465	UUT-8

Footnote 1: Three (3) samples of the Siba fuse were included in UUT-7

Circuit Breaker				
Material	Description	Manufacturer	Part No.	Included in Test
Molded Plastic	CB 3P 0400BE	ABB	T5HQ400TW	UUT-7
Molded Plastic	CB 3P 0600BE	ABB	T5H600BW	UUT-7
Molded Plastic	CB 3P 0800BE	ABB	T6HQ800TW	UUT-8
Molded Plastic	CB 3P 1000BE	ABB	T7H1000BW	UUT-8

Miscellaneous					
Sub-component	Material	Description	Manufacturer	Part No.	Included in Test
Air Filter	Aluminum/ Polypropolene	High flow Air filter	Emerson	21502163	UUT-7, 8
Emergency Module Off	Plastic	Push Button	Emerson	549557G1	UUT-7, 8
Rectifier and Inverter Module	Carbon steel / copper	AC Power Module	Emerson	2356922	UUT-7, 8
Buck and Boost Module Left	Carbon steel / copper	DC Power Module	Emerson	2356921	UUT-7, 8
Buck and Boost Module Right	Carbon steel / copper	DC Power Module	Emerson	2356923	UUT-7, 8
Bypass Module	Carbon steel / copper	Bypass Module 300kVA	Emerson	2356920	UUT-7
Bypass Module	Carbon steel / copper	Bypass Module 600kVA	Emerson	2357249	UUT-8
WEB CARD SNMP	Laminate PWB + Metal Plate	SNMP Communication Card	PowerVAR	AM-P3-CN	UUT-7, 8
WEB CARD SNMP w/ ModBus	Laminate PWB + Metal Plate	SNMP & ModBus Communication Card	PowerVAR	AMB-P3-CN	UUT-7, 8
WEB CARD SNMP Life over IP	Laminate PWB + Metal Plate	LIFE.net Communication Card	PowerVAR	AL-P3-C	UUT-7, 8
Housing / Side Panels	Steel Cold Rolled 20ga	Panel, Side, Painted 7021	Emerson	606376G1	UUT-7, 8



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Liebert NX UPS Systems



Table 3. Summary of Tested Units

Liebert NX

<i>Model Number</i>	<i>Description</i>	<i>UUT Mark</i>	<i>Excitation Direction</i> ³	<i>Frequency (Hz)</i>	<i>Width (in)</i>	<i>Depth (in)</i>	<i>Height (in)</i>	<i>Maximum Weight (lbs)</i>	<i>A_{FLX-H}</i>	<i>A_{RIG-H}</i>	<i>A_{FLEX-V}</i>	<i>A_{RIG-V}</i>	<i>S_{ds}</i>	<i>z/h</i>
38SA300	300kVA UPS	UUT-7	X	13.9	53.4	33.7	78.3	2,450	3.68	2.76	1.53	0.61	2.30	1.0
			Y	11.4										
			Z	none										
38SN600	600kVA UPS	UUT-8	X	11.1	90.7	33.7	78.3	4,450	3.63	2.72	1.51	0.61	2.27	1.0
			Y	9.8										
			Z	none										

Notes

1. All units tested with included side panels
2. Equipment tested at Qualtech NP in Cincinnati, OH on January 29-30, 2013 (Report #Q1259.0 Rev 1)
3. Excitation direction: X - front-back; Y - side-side; Z - vertical
4. All units hard-mounted (bolted) at the base



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Liebert NX UPS Systems



Table 4. Summary of Tested Unit Subcomponents
 Liebert NX

	Sub-Component	Material	Description	Manufacturer	Part No.
UUT-7 300kVA UPS	Fan	Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/steel motor	Fan, 230V, 150MM	EBM-PAPST	W2S130-AA03-01
	Fan	Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/steel motor	Fan, 230V, 150MM	Fandis	A17M23SWBM00
	Transformer	Carbon Steel/Copper	Fan Supply Transformers	Falco	T53002
	Transformer	Carbon Steel/Copper	Shunt Trip Transformers	Falco Electronics	T42003
	Capacitors	Metal/Electrolytic	DC Capacitors	Epcos	B43584S5478M3
	Inductor	Carbon Steel/Copper	AC Input Choke (LIN)	Falco	T52C18
	Inductor	Carbon Steel/Copper	AC Output Choke (LOUT)	Tamura	ET8722
	Breaker	Molded Plastic	CB 3P 0400BE	ABB	T5HQ400TW
	Breaker	Molded Plastic	CB 3P 0600BE	ABB	T5H600BW
	Fuse	Molded Plastic/Copper	Fuse, 700A/690V	Cooper Bussman	170M6461
	Fuse	Molded Plastic/Copper	Fuse, 700A/690V	Siba	2068132.7
	Air Filter	Aluminum/ Polypropolene	High flow Air filter	Emerson	21502163
	Rectifier and Inverter Module	Carbon steel / copper	AC Power Module	Emerson	2356922
	Buck and Boost Module Left	Carbon steel / copper	DC Power Module	Emerson	2356921
	Buck and Boost Module Right	Carbon steel / copper	DC Power Module	Emerson	2356923
	Bypass Module	Carbon steel / copper	Bypass Module 300kVA	Emerson	2356920
	Emergency Module Off	Plastic	Push Button	Emerson	549557G1
	WEB CARD SNMP	Laminate PWB + Metal Plate	SNMP Communication Card	PowerVAR	AM-P3-CN
	WEB CARD SNMP w/ ModBus	Laminate PWB + Metal Plate	SNMP & ModBus Communication Card	PowerVAR	AMB-P3-CN
	WEB CARD SNMP Life over IP	Laminate PWB + Metal Plate	LIFE.net Communication Card	PowerVAR	AL-P3-C
Housing / Side Panels	Carbon Steel Cold Rolled 18ga	Panel, Side, Painted 7021	Emerson	606376G1	



Special Seismic Certification
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Table 4. Summary of Tested Unit Subcomponents ~ con't

Liebert NX

<i>Sub-Component</i>	<i>Material</i>	<i>Description</i>	<i>Manufacturer</i>	<i>Part No.</i>
Fan	Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/steel motor	Fan, 230V, 150MM	EBM-PAPST	W2S130-AA03-01
Fan	Plastic Frame + Impeller; Carbon Steel Ball Bearing; Copper/steel motor	Fan, 230V, 150MM	Fandis	A17M23SWBM00
Transformer	Carbon Steel/Copper	Fan Supply Transformers	Falco	T53002
Transformer	Carbon Steel/Copper	Shunt Trip Transformers	Falco Electronics	T42003
Capacitors	Metal/Electrolytic	DC Capacitors	Epcos	B43584S5478M3
Inductor	Carbon Steel/Copper	AC Input Choke (LIN)	Falco	T52C18
Inductor	Carbon Steel/Copper	AC Output Choke (LOUT)	Tamura	ET8722
Breaker	Molded Plastic	CB 3P 800BE	ABB	T6HQ800TW
Breaker	Molded Plastic	CB 3P 1000BE	ABB	T7H1000BW
Fuse	Molded Plastic/Copper	Fuse, 1100A/690V	Cooper Bussman	170M6465
Air Filter	Aluminum/ Polypropolene	High flow Air filter	Emerson	21502163
Rectifier and Inverter Module	Carbon steel / copper	AC Power Module	Emerson	2356922
Buck and Boost Module Left	Carbon steel / copper	DC Power Module	Emerson	2356921
Buck and Boost Module Right	Carbon steel / copper	DC Power Module	Emerson	2356923
Bypass Module	Carbon steel / copper	Bypass Module 600kVA	Emerson	2357249
Emergency Module Off	Plastic	Push Button	Emerson	549557G1
WEB CARD SNMP	Laminate PWB + Metal Plate	SNMP Communication Card	PowerVAR	AM-P3-CN
WEB CARD SNMP w/ ModBus	Laminate PWB + Metal Plate	SNMP & ModBus Communication Card	PowerVAR	AMB-P3-CN
WEB CARD SNMP Life over IP	Laminate PWB + Metal Plate	LIFE.net Communication Card	PowerVAR	AL-P3-C
Housing / Side Panels	Carbon Steel Cold Rolled 18ga	Panel, Side, Painted 7021	Emerson	606376G1

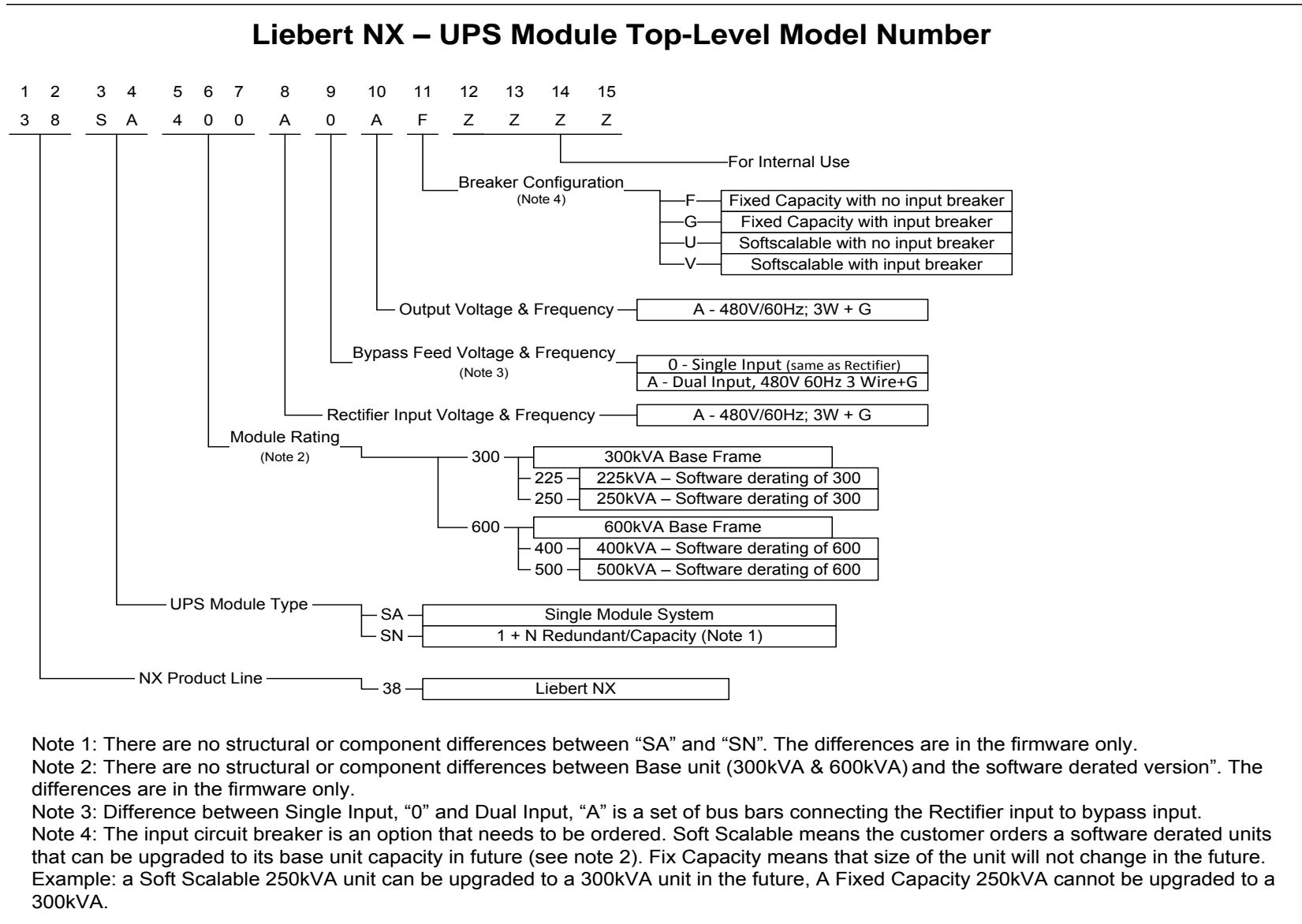
UUT-8
600kVA UPS



Special Seismic Certification
OSHDP Preapproval
Liebert NX UPS Systems



Table 5. Nomenclature
Liebert NX UPS



Note 1: There are no structural or component differences between “SA” and “SN”. The differences are in the firmware only.
 Note 2: There are no structural or component differences between Base unit (300kVA & 600kVA) and the software derated version”. The differences are in the firmware only.
 Note 3: Difference between Single Input, “0” and Dual Input, “A” is a set of bus bars connecting the Rectifier input to bypass input.
 Note 4: The input circuit breaker is an option that needs to be ordered. Soft Scalable means the customer orders a software derated units that can be upgraded to its base unit capacity in future (see note 2). Fix Capacity means that size of the unit will not change in the future. Example: a Soft Scalable 250kVA unit can be upgraded to a 300kVA unit in the future, A Fixed Capacity 250kVA cannot be upgraded to a 300kVA.

Test Setup Photos
Liebert NX



Figure 1: NX 300kVA UPS

Attachment Method: rigid-mount - (9) 3/4"dia bolts to table, angle brackets by Liebert

$A_{FLX-H} = 3.68$; $A_{RIG-H} = 2.76$; Unit maintained structural integrity and functionality after the ICC-ES AC-156 test.

Test Setup Photos
Liebert NX



Figure 2: NX 600kVA UPS
Attachment Method: rigid-mount - (13) 3/4"dia bolts to table, angle brackets by Liebert
 $A_{FLX-H} = 3.63$; $A_{RIG-H} = 2.72$; Unit maintained structural integrity and functionality after the ICC-ES AC-156 test.