APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0529-10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: RPS S.p.A

Manufacturer's Technical Representative: Nicola Caglia

Mailing Address: Viale Europa, 7 – 37045 Legnago, Verona (Italy)

Telephone: +39 02 663271 Email: n.caglia@riello-ups.com

Product Information

Product Name: Master HP UL

Product Type: Uninterruptible Power Supply

Product Model Number: See Certified Product Listing tables, attached.
(List all unique product identification numbers and/or part numbers)

General Description: Uninterruptible power supplies with fans, power and bypass modules, inductors, switches, transformers, fuse & fuse holders, terminal blocks, capacitors, contactors, and bus bars. Seismic enhancements made to the test units required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigidly mounted at base

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John P Giuliano, PE

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: 973-838-1780 Email: john.giuliano@thevmcgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: Date: 6/16/17

Title: President Company Name: The VMC Group

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

Company Name: The VMC Group

Name: Mr. Ken Tarlow California License Number: SE2851

Mailing Address: 113 Main St., Bloomingdale, NJ 07403

Telephone: 973-838-1780 Email: ken.tarlow@thevmcgroup.com

Supports and Attachments Preapproval

☐ Supports and attachments are preapproved under OPM- _____
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)

☒ Supports and attachments are not preapproved

Certification Method

☒ Testing in accordance with: ☒ ICC-ES AC156

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Dynamic Certification Laboratories

Contact Name: Kelly Laplace, Project Manager

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

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

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.13 for S_{DS}=2.5 at z/h=0 and 1.44 for S_{DS}=2.0 at z/h=1.0

S_{DS} (Design spectral response acceleration at short period, g) = 2.50 at z/h =0 and 2.00 at z/h=1.0

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) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 0 for S_{DS} = 2.5g and 1.0 for S_{DS} = 2.0g

Equipment or Component Natural Frequencies (Hz) = See Attachments

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

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = _____

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

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

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

☐ Other(s) (Please Specify): _____

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

Signature: _____ Date: 6/19/2017

Print Name: M. R. Karim Title: SHFR

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

Condition of Approval (if applicable): _____

Table 1 - Certified Uninterruptable Power Supplies Matrix

Model Number	Rating (kVA)	Input Voltage	Current [A]	Max. Enclosure Dimensions for [in]			Enclosure Material	Available Enclosure NEMA Rating	Maximum Weight [lbs]	Product Manufacturer	Mounting	Tested / Interpolated / Extrapolated	Roof Level		Ground Level	
				Height	Width	Depth							S_{DS}	z/h	S_{DS}	z/h
DMHTK65GNB94	65	480V	125	75	31.5	33.5	Galvanized Carbon Steel	1	1500	Riello	Floor	Extrapolated	2.0	1.0	2.5	0.0
DMHTK80GNB94	80		150		31.5				1500				2.0	1.0	2.5	0.0
EMHTM10GNB94	100		175		31.5				1610				2.0	1.0	2.5	0.0
EMHTM13GNB94	125		200		31.5				1742			UUT-01	2.0	1.0	2.5	0.0
EMHTM16HNB94	160		300		39.4	35.9			1852			Interpolated	2.0	1.0	2.5	0.0
EMHTM16HNB96	160		300		58.4				2205				2.0	1.0	2.5	0.0
EMHTM20HNB94	200		350		39.4				1984				2.0	1.0	2.5	0.0
EMHTM20HNB96	200		350		58.4				2337				2.0	1.0	2.5	0.0
FMHTM25HNB94	250		400		39.4				2469				2.0	1.0	2.5	0.0
FMHTM25HNB96	250		400		58.4				2822			UUT-02	2.0	1.0	2.5	0.0

Table 2 - Certified Subcomponents: Fans & Motor Assemblies

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
W2S130-AA03-01	223CFM / 380m^3/h	2.4	Ebm-Papst	UUT-01
W2E200-HK38-01	544CFM / 925m^3/h	4.6		UUT-01, UUT-02

Table 3 - Certified Subcomponents: Power Modules

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
SEMIX 223GB12E4	1200V 200A	0.7	SEMIKRON	Extrapolated
SEMIX 303GB12E4	1200V 300A	0.7		UUT-01
SEMIX 453GB12E4	1200V 450A	0.7		UUT-02
CM200DX-24S	1200V 200A	0.8	MITSUBISHI	Extrapolated
CM300DX-24S	1200V 300A	0.8		UUT-01
CM450DX-24S	1200V 450A	0.8		UUT-02

Table 4 - Certified Subcomponents: Bypass Modules

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
SKKT 162/16E	SCR 1200V 160A	0.4	SEMIKRON	UUT-01
SKKT273/16E	SCR 1400V 250A	0.9		UUT-02

Table 5 - Certified Subcomponents: Inductors

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
C7387	185uH- 110A	29.0	ELETTROMIL	Extrapolated
C7391	0,15mH - 145A	30.9		Extrapolated
C7043	0,125mH - 170A	30.9		UUT-01
C8321/0	0,095mH - 215A	37.5		Interpolated
C8328/0	0,075mH - 270A	41.9		Interpolated
C7849	0,06mH - 335A	61.7		UUT-02
C7386	1.125mH - 110A	62.0		Interpolated
C7390	0,72mH - 240 DC	70.6		Interpolated
C7042	0,6mH - 295A DC	79.4		UUT-01
C8323/0	0,47mH - 380A DC	94.8		Interpolated
C7385	900uH -190A DC	104.0		Interpolated
C8324/0	0,375mH - 475A DC	110.3		Interpolated
C8065/0	0,3mH - 590A DC	110.3		UUT-02
C7389	0,90mH - 145A	114.7		Interpolated
C7041	0,75mH - 170A	127.9		UUT-01
C8327/0	0,55mH - 215A	154.4		Interpolated
C8322/0	0,45mH - 270A	172.0		Interpolated
C7850	0,34mH - 335A	198.5		UUT-02

Table 6 - Certified Subcomponents: Switches

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
OT160E3	125A 600V	2.2	ABB	Extrapolated
OT200U03P	200A 600V	4.0		UUT-01
OT400U03P	400A 600V	7.5		UUT-02

Table 7 - Certified Subcomponents: Transformers

Model	Rating	Weight (Lbs)	Material	Manufacturer	Tested / Interpolated / Extrapolated
C7384	80kVA	629.0	Aluminum	ELETTROMIL	Extrapolated
C7388	100kVA	694.6		ELETTROMIL	Extrapolated
C7040	125kVA	771.8		ELETTROMIL	UUT-01
C8325/0	160kVA	771.8		ELETTROMIL	Interpolated
C8326/0	200kVA	860.0		ELETTROMIL	Interpolated
C7848	250kVA	1014.3		ELETTROMIL	UUT-02
95945403	TRASF 100VA230-400/400V 50-60	4.4	Copper	P.M.A.	UUT-01, UUT-02
95945402	TRASF 100VA 230-480/400 50-60	4.4		P.M.A.	UUT-01, UUT-02
95980010	AUTOT.3F+N 440-480/400V 1k2VA	8.8		P.M.A.	UUT-01, UUT-02

Table 8 - Certified Subcomponents: Current Transformers

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
HAS 200-S	SENSOR CORR OPEN LOOP 200A	< 0.2	LEM	Extrapolated
HAS 300-S	SENSOR CORR OPEN LOOP 300A	< 0.2		UUT-01
HAS 500-S	SENSOR CORR OPEN LOOP 500A	< 0.2		UUT-02
151085	TA 200/0.2A	0.8	SIRIO	UUT-01
150461	TA 400/0.2A	0.8		UUT-01, UUT-02

Table 9 - Certified Subcomponents: Fuse Holders

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
B305050	690V - 32A	< 0.2	FERRAZ	UUT-01, UUT-02
USCC1	600V - 30A	< 0.2		UUT-02
002541000	690V - 32A	< 0.2	ETI	UUT-01, UUT-02

Table 10 - Certified Subcomponents: Terminal Blocks

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
BP100	20 A	< 0.2	CABUR	UUT-01, UUT-02

Table 11 - Certified Subcomponents: Capacitors

Model	Material	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
416.84.4180	Polyurethane Resin / PPM Film	0.9	DUCATI	Extrapolated
416.84.4310		1.2		UUT-01
416.84.4521		2.0		UUT-02
416.84.3631		2.0		Interpolated
416.84.3691		2.0		Interpolated
416.84.3751		2.4		UUT-01, UUT-02
APUX472X450DJ1	Aluminium Electrolytic	2.5	ITELCOND	Extrapolated
APUX682X450DJ1		2.5		UUT-01
APUX103X450DJ1		2.5		UUT-02

Table 12 - Certified Subcomponents: Contactors

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
3RT1015-1BB41	15A-24Vdc	0.6	SIEMENS	UUT-01, UUT-02
3RT1054-6AP36	160A-220V	7.0		Interpolated
3RT1055-6AP36	185A-220V	7.1		UUT-01
3RT1064-6AP36	275A-220V	13.7		Interpolated
3RT1065-6AP36	330A-220V	14.0		Interpolated
3RT1466-6AP36	400A-220V	14.0		UUT-02

Table 13 - Certified Subcomponents: Fuses

Model	Rating	Weight (Lbs)	Manufacturer	Tested / Interpolated / Extrapolated
KTK-R-4/10	400mA CC 600Vac 10x38	< 0.2	BUSSMANN	UUT-02
170M1318* 170M1368**	125A aR 700Vdc 200kA	0.3	BUSSMANN	Interpolated
170M1319* 170M1369**	160A aR 700Vdc 200kA	0.3	BUSSMANN	Interpolated
170M1320* 170M1370**	200A aR 700Vdc 200kA	0.3	BUSSMANN	UUT-01, UUT-02
170M1321	250A aR 690Vac 200kA	0.3	BUSSMANN	Interpolated
170M1321* 170M1371**	250A aR 700Vdc 200kA	0.3	BUSSMANN	Interpolated
170M1322	315A aR 690Vac 200kA	0.3	BUSSMANN	UUT-02
170M1322* 170M1372**	315A aR 700Vdc 200kA	0.3	BUSSMANN	UUT-01
170M2620** 170M2670***	350A aR 690Vac 200kA	0.3	BUSSMANN	UUT-02
002625102	4A gR 900Vdc 10x38	< 0.2	ETI	UUT-01, UUT-02
ATQR-4/10	400mA CC 600Vac 10x38	< 0.2	FERRAZ	UUT-02
Q1014567	2A gR 690v 10x38	< 0.2	FERRAZ	UUT-02
W1014572	4A gR 690V 10x38	< 0.2	FERRAZ	UUT-01, UUT-02
DCT4-2	4A gR 900Vdc 10x38	< 0.2	FERRAZ	UUT-01, UUT-02
M330038	125A aR 690V 200kA	0.3	FERRAZ	Interpolated
N330039	160A aR 690V 200kA	0.3	FERRAZ	Interpolated
P330040	200A aR 690V 200kA	0.3	FERRAZ	UUT-01
Q330041	250A aR 690Vac 200kA	0.3	FERRAZ	Interpolated
R330042	315A aR 690Vac 200kA	0.3	FERRAZ	UUT-02
50 179 06.2	2A gR 690v 10x38	< 0.2	SIBA	UUT-02
50 179 06.4	4A gR 690V 10x38	< 0.2	SIBA	UUT-01, UUT-02
50 215 26.4	4A gR 900Vdc 10x38	< 0.2	SIBA	UUT-01, UUT-02
20 292 21.125* 20 292 20.125**	125A aR 700Vdc 200kA	0.3	SIBA	Interpolated
20 292 21.160* 20 292 20.160**	160A aR 700Vdc 200kA	0.3	SIBA	Interpolated
20 292 21.200* 20 292 20.200**	200A aR 700Vdc 200kA	0.3	SIBA	UUT-01, UUT-02
20 292 21.250* 20 292 20.250**	250A aR 700Vdc 200kA	0.3	SIBA	Interpolated
20 292 21.315* 20 292 20.315**	315A aR 700Vdc 200kA	0.3	SIBA	UUT-01
20 189 21.350* 20 189 20.350**	350A aR 690Vac 200kA	0.3	SIBA	UUT-02

Notes

1. * - No Indicator
2. ** - With Visual Indicator
3. *** - Type T Indicator (microswitch)

Table 14 - Certified Subcomponents: Bus Bars

Riello p/n	Description	Material	Manufacturer	Tested / Interpolated / Extrapolated
0SBAA0028A	BARRA CU ALT-1 MOD.INV MPS HP	Copper	Riello	UUT-01, UUT-02
0SBAA0031A	BARRA CU N-COND.INV MPS HP			UUT-01, UUT-02
0SBAA0096A	BARRA CU COMM ALT-1 MPS HP120			UUT-01
0SBAA0097A	BARRA CU COMM ALT-2 MPS HP120			UUT-01
0ULSBAA0001A	BARRA CU TERRA			UUT-01
0ULSBAA0002A	BARRA CU INPUT 1 FASE A			UUT-01
0ULSBAA0003A	BARRA CU INPUT 1 FASE B			UUT-01
0ULSBAA0004A	BARRA CU INPUT 1 FASE C			UUT-01
0ULSBAA0005A	BARRA CU INPUT FASE N			UUT-01
0ULSBAA0006A	BARRA CU OUTPUT FASE N			UUT-01
0ULSBAA0007A	BARRA CU INPUT 2 FASE C			UUT-01
0ULSBAA0008A	BARRA CU INPUT 2 FASE B			UUT-01
0ULSBAA0009A	BARRA CU INPUT 2 FASE A			UUT-01
0ULSBAA0010A	BARRA CU IN/OUT			UUT-01
0ULSBAA0011A	BARRA CU SHUNT N > TERRA			UUT-01
0ULSBAA0012A	BARRA CU +/- BATTERIA			UUT-01
0ULSBAA0013A	BARRA CU COLL TL OUT			UUT-01
0ULSBAA0014A	BARRA CU NEUTRO			UUT-01
0ULSBAA0015A	BARRA CU INPUT 1-2 FASE A			UUT-01
0ULSBAA0016A	BARRA CU COLL TL IN			UUT-01
0ULSBAA0017A	BARRA CU INPUT 1-3 FASE B			UUT-01
0ULSBAA0018A	BARRA CU SUPP LEM			UUT-01
0ULSBAA0019A	Barra Cu Neg Input Fusibile			UUT-01
0ULSBAA0020A	BARRA CU NEG OUTPUT FUSIBILE			UUT-01
0ULSBAA0021A	BARRA CU NEG MOD INV/RD			UUT-01, UUT-02
0ULSBAA0022A	BARRA CU POS MOD INV/RD			UUT-01, UUT-02
0ULSBAA0024A	BARRA CU NEG COND INV/RAD			UUT-01, UUT-02
0ULSBAA0025A	BARRA CU POS COND INV/RD			UUT-01, UUT-02
0ULSBAA0026A	BARRA CU INPUT 1-2 FASE B			UUT-01
0ULSBAA0027A	BARRA CU INPUT 1-3 FASE C			UUT-01
0ULSBAA0028A	BARRA CU INPUT 1-2 FASE C			UUT-01
0ULSBAA0029A	BARRA CU OUTPUT 1 FASE A			UUT-01
0ULSBAA0030A	BARRA CU OUTPUT 2 FASE A			UUT-01
0ULSBAA0031A	BARRA CU OUTPUT 3 FASE A			UUT-01
0ULSBAA0032A	BARRA CU OUTPUT 1 FASE B			UUT-01
0ULSBAA0033A	BARRA CU OUTPUT 2 FASE B			UUT-01
0ULSBAA0034A	BARRA CU OUTPUT 3 FASE B			UUT-01
0ULSBAA0035A	BARRA CU OUTPUT 1 FASE C			UUT-01
0ULSBAA0036A	BARRA CU OUTPUT 2 FASE C			UUT-01
0ULSBAA0037A	BARRA CU OUTPUT 3 FASE C			UUT-01
0ULSBAA0038A	BARRA CU COM MODULI			UUT-01
0ULSBAA0039A	BARRA CU COMM ALT HIP 125 UL			UUT-01
0ULSBAA0040A	BARRA CU NEG TY1 MOD INV			UUT-01
0ULSBAA0041B	BARRA CU POS MOD INV			UUT-01
0ULSBAA0042A	BARRA CU NEG TY2 MOD INV			UUT-01
0ULSBAA0043A	BARRA CU DA SW A COM STAT			UUT-01
0ULSBAA0044A	BARRA CU ALT-2 MOD RD-INV HIP			UUT-01
0ULSBAA0045A	BARRA CU ALT-1 MOD RD-INV HIP			UUT-01
0ULSBAA0046A	BARRA CU GND SK FILTRO			UUT-01
0ULSBAA0047A	BARRA CU NEG MOD RD/BATT			UUT-01

Table 14 - Certified Subcomponents: Bus Bars (Continued)

Riello p/n	Description	Material	Manufacturer	Tested / Interpolated / Extrapolated
0ULSBAA0048B	BARRA CU POS MOD RD/BATT	Copper	Riello	UUT-01
0ULSBAA0049A	BARRA CU COLL MODULI			UUT-01
0ULSBAA0050A	BARRA CU OUT FUSE FASE A			UUT-01
0ULSBAA0051A	BARRA CU OUT FUSE FASE B			UUT-01
0ULSBAA0052A	BARRA CU OUT FUSE FASE C			UUT-01
0ULSBAA0053A	BARRA CU FASE A			Interpolated
0ULSBAA0054A	BARRA CU FASE B			Interpolated
0ULSBAA0055A	BARRA CU FASE C			Interpolated
0ULSBAA0056A	BARRA CU BYPASS FASE A			Interpolated
0ULSBAA0057A	BARRA CU BYPASS IN FASE B			Interpolated
0ULSBAA0058A	BARRA CU BYPASS IN FASE C			Interpolated
0ULSBAA0059A	BARRA CU BYPASS OUT FASE B			Interpolated
0ULSBAA0060A	BARRA CU BYPASS OUT FASE C			Interpolated
0ULSBAA0061A	BARRA CU NEUTRO IN/OUT			Interpolated
0ULSBAA0062A	BARRA CU BOND N_TERRA			Interpolated
0ULSBAA0063A	BARRA CU COMM INPUT			Interpolated
0ULSBAA0064A	BARRA CU +/- BATTERIA 80			Interpolated
0ULSBAA0065A	BARRA CU ALT-3 MOD INV MHT			UUT-02
0ULSBAA0066A	BARRA CU MOD COM ST-1 MHT			UUT-02
0ULSBAA0067A	BARRA CU MOD COM ST-2 MHT			UUT-02
0ULSBAA0068A	BARRA CU MOD COM ST-3 MHT			UUT-02
0ULSBAA0069A	BARRA CU MOD COM ST-4 MHT			UUT-02
0ULSBAA0070A	BARRA CU MOD COM ST-5 MHT			UUT-02
0ULSBAA0071A	BARRA CU MOD COM ST-6 MHT			UUT-02
0ULSBAA0072A	BARRA CU MOD COM ST-7 MHT			UUT-02
0ULSBAA0073A	BARRA CU NEG MOD INV SX			UUT-02
0ULSBAA0074A	BARRA CU POS MOD INV SX			UUT-02
0ULSBAA0075A	BARRA CU POS MOD INV DX			UUT-02
0ULSBAA0076A	BARRA CU NEG MOD INV DX			UUT-02
0ULSBAA0077A	BARRA CU COM INV			UUT-02
0ULSBAA0078A	BARRA CU NEUTRO IN SK FILTRO			UUT-02
0ULSBAA0079A	BARRA CU NEUTRO INPUT			UUT-02
0ULSBAA0080A	BARRA CU BOND N - TERRA			Interpolated
0ULSBAA0081A	BARRA CU TERRA MHT UL			Interpolated
0ULSBAA0082A	BARRA CU POS BATT			UUT-02
0ULSBAA0083A	BARRA CU NEG BATT			UUT-02
0ULSBAA0084A	BARRA CU SWIN-SWOUT FASE A			UUT-02
0ULSBAA0085A	BARRA CU SWIN-SWOUT FASE B			UUT-02
0ULSBAA0086A	BARRA CU SWIN-SWOUT FASE C			UUT-02
0ULSBAA0087A	BARRA CU COLL TL IN FASE A			UUT-02
0ULSBAA0088A	BARRA CU COLL TL IN FASE B			UUT-02
0ULSBAA0089A	BARRA CU COLL TL IN FASE C			UUT-02
0ULSBAA0090A	BARRA CU TERRA SK FILTRO			UUT-02
0ULSBAA0091A	BARRA CU NEUTRO OUT SK FILTRO			UUT-02
0ULSBAA0092A	BARRA CU SWBY FASE A			UUT-02
0ULSBAA0093A	BARRA CU SWBY FASE B			UUT-02
0ULSBAA0094A	BARRA CU SWBY FASE C			UUT-02
0ULSBAA0095A	BARRA CU SWOUT FUSE			UUT-02
0ULSBAA0096A	BARRA CU COLL TL OUT FASE A			UUT-02
0ULSBAA0097A	BARRA CU COLL TL OUT FASE B			UUT-02

Table 14 - Certified Subcomponents: Bus Bars (Continued)

Riello p/n	Description	Material	Manufacturer	Tested / Interpolated / Extrapolated
0ULSBAA0098A	BARRA CU COLL TL OUT FASE C	Copper	Riello	UUT-02
0ULSBAA0099A	BARRA CU COLL SWOUT CS			UUT-02
0ULSBAA0100A	BARRA CU NEUTRO OUTPUT			UUT-02
0ULSBAA0101A	BARRA CU NEG MODULI			UUT-02
0ULSBAA0102A	BARRA CU POS MODULI			UUT-02
0ULSBAA0103A	BARRA CU POS COLL MODULO			UUT-02
0ULSBAA0104A	BARRA CU NEG COLL MODULO			UUT-02
0ULSBAA0105A	BARRA CU NEG COLL MOD TY1			UUT-02
0ULSBAA0105A	BARRA CU NEG COLL MOD TY1			UUT-02
0ULSBAA0106A	BARRA CU NEUTRO TCE			UUT-02
0ULSBAA0107A	BARRA CU BOND N-TERRA TCE			UUT-02
0ULSBAA0108A	BARRA CU POS TCE			UUT-02
0ULSBAA0109A	BARRA CU NEG TCE			UUT-02
0ULSBAA0110A	BARRA CU IN-OUT BATT TCE			UUT-02
0ULSBAA0111A	BARRA CU FASE A TCE			UUT-02
0ULSBAA0112A	BARRA CU FASE B TCE			UUT-02
0ULSBAA0113A	BARRA CU FASE C TCE			UUT-02
0ULSBAA0114A	BARRA CU IN-OUT FASE TCE			UUT-02
0ULSBAA0115A	BARRA CU OUT-BY TCE			UUT-02
0ULSBAA0116A	BARRA CU FASE C SWMB OUT TCE			UUT-02
0ULSBAA0117A	BARRA CU FASE B SWMB OUT TCE			UUT-02
0ULSBAA0118A	BARRA CU FASE A SWMB OUT TCE			UUT-02
0ULSBAA0119A	BARRA CU FASE C SWMB BY TCE			UUT-02
0ULSBAA0120A	BARRA CU FASE B SWMB BY TCE			UUT-02
0ULSBAA0121A	BARRA CU FASE A SWMB BY TCE			UUT-02
0ULSBAA0122A	BARRA CU COMM IN-BY TCE			UUT-02
0ULSBAA0123A	BARRA CU NEG COLL MOD TY2			UUT-02
0ULSBAA0124A	BARRA CU NEG COLL MOD TY3			UUT-02
0ULSBAA0136A	BARRA CU FLEX 32x1x5 L=730			UUT-02
0ULSBAA0137A	BARRA CU FLEX 32x1x5 L=500			UUT-02
0ULSBAA0141A	BARRA CU FLEX 20x1x4 L=290			UUT-02
0ULSBAA0142A	BARRA CU N OUTPUT_N INPUT			UUT-02
0ULSBAA0143A	BARRA CU SWIN-SWBY FASE A			Interpolated
0ULSBAA0144A	BARRA CU SWIN-SWBY FASE B			Interpolated
0ULSBAA0145A	BARRA CU SWIN-SWBY FASE C			Interpolated
0ULSBAA0146A	BARRA CU INPUT COMM TY1			Interpolated
0ULSBAA0147A	BARRA CU INPUT COMM TY2			Interpolated
0ULSBAA0148A	BARRA CU NEG COLL MOD TY4			UUT-02
0ULSBAA0149A	BARRA CU SWIN FUSE			UUT-02
0ULSBAA0150A	BARRA CU SWOUT FUSE			UUT-02
0ULSBAA0155A	Barra Cu Flex 32x1x4 L=560			UUT-02
0ULSBAA0156A	Barra Cu Flex 32x1x4 L=500			UUT-02
0ULSBAA0157A	Barra Cu Flex 32x1x4 L=530			UUT-02
0ULSBAA0158A	BARRA CU PH A TL2-FUSE			UUT-02
0ULSBAA0159A	BARRA CU PH B TL2-FUSE			UUT-02
0ULSBAA0160A	BARRA CU PH C TL2-FUSE			UUT-02
0ULSBAA0161A	BARRA CU PH A TL3-FUSE			UUT-02
0ULSBAA0162A	BARRA CU PH B TL3-FUSE			UUT-02
0ULSBAA0163A	BARRA CU PH C TL3-FUSE			UUT-02
0ULSBAA0164A	BARRA CU BLOCCO FUSE MHT UL			UUT-02
0ULSBAA0165A	BARRA CU BATT MOD RD-INV MHT			UUT-02
0ULSBAA0166A	BARRA CU PIASTRA NEGATIVO MHT			UUT-02
0ULSBAA0167A	BARRA CU IN BATT MHT			Extrapolated

Table 15 - Certified Subcomponents: Miscellaneous Sub-components

Model	Description	Material	Manufacturer	Tested / Interpolated / Extrapolated
9L..2077.03.	MPS-HP Int.AC+RC SCR 80k	FR4 (fiberglass cloth with an epoxy resin)	Riello	Extrapolated
9L..2077.02.	MPS-HP Int.AC+RC SCR 100k		Riello	Extrapolated
9L..2077.01.	MPS-HP Int.AC+RC SCR 125k		Riello	UUT-01
9L..2077.04.	MPS-HP Int.AC+RC SCR 250k		Riello	UUT-02
9L..2108.03.	Board MHT Interf. V-I 100k PF 0.9		Riello	UUT-01, UUT-02
9L..2108.04.	Board MHT Interf. V-I 125k PF 0.9		Riello	UUT-01
9L..2108.01.	Board MHT Interf. V-I 160k PF 0.9		Riello	UUT-01, UUT-02
9L..2108.02.	Board MHT Interf. V-I 200k PF 0.9		Riello	UUT-01, UUT-02
9L..2108.05.	Board MHT Interf. V-I 250k PF 0.9		Riello	UUT-01, UUT-02
9LAB2090B01APT	Sentry can interface I/O Expander		Riello	UUT-01, UUT-02
9LAB2090B01BPT	Sentry can interface I/O Expander		Riello	UUT-01, UUT-02
9L..2074.01.	Suppressor Board		Riello	Interpolated
9L..2074.02.	Board filter X-Y		Riello	UUT-01
9L..2098.01.	Sentry Contactors single Driver MPS		Riello	Interpolated
9L..2128.01.	Board filter X-Y MPS		Riello	Interpolated
9L..2117.01	Board filter RF Battery		Riello	UUT-02
9L..2100.01.	Board filter EMC		Riello	UUT-01, UUT-02
9L..2102.01.	Sentry MPS Driver IGBT smd		Riello	UUT-01, UUT-02
9L..2120.01.	Board MPS Global power supply UL		Riello	UUT-01, UUT-02
9L..2034.01.	Board Parallel		Riello	UUT-01, UUT-02
9..2076.01.	Interf.contr.inv.SMT Coll		Riello	UUT-01, UUT-02
9..2032.01.	Sentry MS Systenm Board		Riello	UUT-01, UUT-02
9..2112.01.	Sentry MPS IGBT rectifier control		Riello	UUT-01, UUT-02
9..2124.01.	MPS Control Board panel graph		Riello	UUT-01, UUT-02
9..2101.02.	S.MPS Parallel RJ45 Flat		Riello	UUT-01
9L..2113.01.	Board MPS RS-232		Riello	UUT-02
9L..2078.01	MPS static switch driver Sentry		Riello	UUT-01, UUT-02
9..2132.01.	Board Display grahf 8 key ov. C		Riello	UUT-01, UUT-02
YSKCSA2AUL	SNMP Ethernet Card		Riello	UUT-01, UUT-02
825-0593	Shunt Trip Board		Staco	UUT-01, UUT-02

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-1

VMA-49048-02

Model Line	Model Number	Manufacturer
Master HP UL	EMHTM13GNB94	RPS S.p.A

Product Construction Summary

Galvanized Carbon Steel

Options / Subcomponent Summary

Fans & motors: 223 & 544 CFM / 380 & 925 m^3/h; Power module:1200V/300A; Bypass Module:1200V/160A; Inductors:0,125mH-170A, 0,6mH-295A DC, 0,75mH-170A; switch:200A/600V; Transformer:125kVA; Current Transformers:300A, 500A, 200/0.2A; Fuse Holder:690V-32A; Terminal Block:20A; Capacitors: DUCATI & ITELCOND; Contactors:15A-24Vdc, 185A-220V; Fuses:Bussman, ETI, FERRAZ, SIBA; Bus Bars: See Table14.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Height	Width	Depth	F-B	S-S	V
1,750	75.0	31.4	33.5	9.0	9.3	18.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.67	0.67
		2.50	0.0					

Test Mounting Details

UUT-1 was floor-mounted to the interface plate using qty (6) 3/8" Grade 8 bolts in the manufacturer-provided mounting holes. The interface plate was attached to the shake table with M12 threaded rod spaced at approximately 8 inches on-center.

All units were filled with contents and maintained structural integrity and functionality after AC156 testing

UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2

VMA-49048-02

Model Line	Model Number	Manufacturer
Master HP UL	FMHTM25HNB96	RPS S.p.A

Product Construction Summary

Galvanized Carbon Steel

Options / Subcomponent Summary

Fan & motor: 544 CFM / 925 m^3/h; Power module:1200V/450A; Bypass Module:1400V/250A; Inductors:0,06mH-335A, 0,3mH-590A DC, 0,34mH-335A; switch:400A/600V; Transformer:250kVA; Current Transformers:500A, 400/0.2A; Fuse Holdesr:690V-32A, 600V-30A; Terminal Block:20A; Capacitors: DUCATI & ITELCOND; Contactors:15A-24Vdc, 400A-220V; Fuses:Bussman, ETI, FERRAZ, SIBA; Bus Bars: See Table14.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Height	Width	Depth	F-B	S-S	V
27,00	75.0	58.4	35.9	10.3	7.0	33.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.67	0.67
		2.50	0.0					

Test Mounting Details

UUT-2 was floor-mounted to the interface plate using qty (20) 3/8" Grade 8 bolts in the manufacturer-provided mounting holes. The interface plate was attached to the shake table with M12 threaded rod spaced at approximately 8 inches on-center.

All units were filled with contents and maintained structural integrity and functionality after AC156 testing