



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0802

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Vertiv Corporation

Manufacturer's Technical Representative: Carlos Robles

Mailing Address: 530 Westar Blvd., Westerville, OH 43082

Telephone: (614) 888-0246

Email: carlos.robles@vertiv.com

Product Information

Product Name: Air Conditioning Units

Product Type: Air Conditioning Units - Data Room

Product Model Number: Vertiv Liebert Condensing Units

General Description: Vertiv Liebert condensing units designed to work with various Vertiv Liebert evaporator units. See product tables.

Mounting Description: Neoprene Vibration Isolated, Floor Mounted

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates

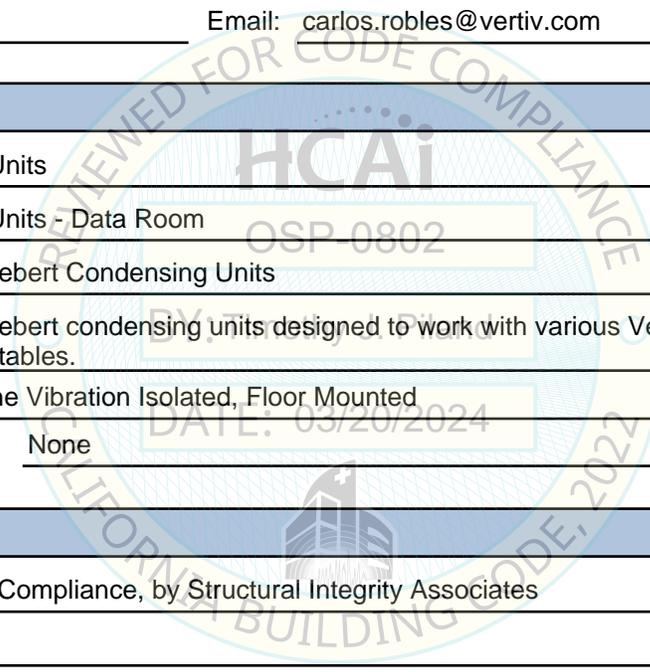
Contact Person: Victoria Ahrens

Mailing Address: 233 SW Wilson Ave, Suite 101, Bend, OR 97702

Telephone: (541) 292-5820

Email: vahrens@structint.com

Title: Certification Engineer





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

Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.

Name: LACHEZAR HANDZHIYSKI California License Number: S6515

Mailing Address: 5215 Hellyer Avenue, Suite 210, San Jose, CA 95138

Telephone: (669) 437-0200 Email: Lhandzhiyski@StructInt.com

Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3

Other (Please Specify): _____

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)

Contact Person: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas TX 752293513

Telephone: (972) 247-9657 Email: info@etldallas.com



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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 3.60 (SDS=2.00 @ z/h=1); 1.50 (SDS=2.50 @ z/h=0)

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1); 2.50 (z/h = 0)

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 03/20/2030

Date: 3/20/2024

Name: Timothy Piland Title: Senior Structural Engineer

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

Condition of Approval (if applicable): DATE: 03/20/2024



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

TRU PROJECT NO. 2301207, Rev. 0



Manufacturer: Vertiv Corporation
Model Line: Outdoor Heat Exchanger (OHE)

TABLE 1.1

Nomenclature
FOR REFERENCE ONLY

1	2	3	4	-	5	7	8	9
CU	M	NN	V	-	X	0	Y	Z
Digit	Value	Description						
1	CU	Vertiv™ Liebert™ Condensing Unit						
2	M may be D or L	Low-Ambient Kit, (LAK), feature	D = Condensing unit without LAK feature L = Condensing unit with LAK feature					
3	NN may be 03 or 07 or 11	Heat rejection capacity	03 = 3.5 kW heat rejection capacity 07 = 7 kW heat rejection capacity 11 = 11 kW heat rejection capacity					
4	V may be 0 or 1	Power supply configuration	0 = 208/230 V; 50/60 Hz; 1φ (Global) 1 = 208/230 V; 60 Hz; 3φ (NAM)					
5	X may be 0 or E	Condenser coil coating for aggressive environments feature	0 = No coating E = Special coating for aggressive environments					
6	0	Single power supply configuration						
7	YY may be any numeric digit	To be used for future features	00 = no special feature added ## = custom feature nonrelated to safety					
8	Z may be any letter from A to Z	Version of the appliance	A = First revision					



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 2301207, Rev. 0



Manufacturer: Vertiv Corporation Model Line: Outdoor Heat Exchanger (OHE)		Table Description: Mechanical & Electrical Components			TABLE 2	
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0g \quad z/h = 1.0$ $S_{DS} = 2.5g \quad z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Microchannel Condenser Coil	Zhejiang Sanhua Intelligent Controls Co Ltd.	10041679 (vertiv P/N)	Aluminum: coil body and microchannels Copper: inlet and outlet piping Brazing between coil and piping protected with sleeving	Design pressure: 45 bar (652.7 psi) Burst pressure: 135 bar (1958.009 psi) PED Cat. II	1	
		10041680 (Vertiv P/N)			Interp.	
		10041681 (Vertiv P/N)			2	
Check Valve	White-Rodgers Division, Emerson Electric Co.	ACK-8	Copper (1/2") \varnothing	Max. working pressure: 46.9 bar (680 psi)	1, 2	
	Danfoss A/S	NRV12S02B	Copper (1/2") \varnothing	Max. working pressure: 46 bar (667 psi)	1, 2	
Compressor	Mitsubishi Electric (Guangzhou) Compressor Co., LTD.	SVB110FCDMC	Brushless motor; insulation class E.	200-220 VAC; 60 Hz; 3.3 FLA. Max. operating pressure: 42.8 bar (620.8 psi)	1	
		SVB130QBMC	Brushless motor; insulation class E.	200-220 VAC; 60 Hz; 6.4 FLA. Max. operating pressure: 42.8 bar (620.8 psi)	Interp.	
		SVB220FMGMC-L	Brushless motor; insulation class E.	200-220 VAC; 60 Hz; 7.8 FLA. Max. operating pressure: 42.8 bar (620.8 psi)	2	
Variable Frequency Driver (VFD)	Suzhou Inovance Technology Co., Ltd.	MD520-2S1.2BS-INT	Input: 200-240V; 50/60Hz; 14.0A; 1ph. Output: 200-230V; 7.0A; 0-599 Hz; 3ph.		1	
		MD520-2S2.2BS-INT	Input: 200-240V; 50/60Hz; 20A; 1ph. Output: 200-230V; 9.6A; 0-99 Hz; 3ph.		Interp.	
		MD520-2T2.2BS-INT	Input: 200-240V; 50/60Hz; 11.4A; 3ph. Output: 200-230V; 9A; 0-599 Hz; 3ph.		2	

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 2301207, Rev. 0



Manufacturer: Vertiv Corporation Model Line: Outdoor Heat Exchanger (OHE)		Table Description: Low Ambient Kit			TABLE 3	
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0 g \quad z/h = 1.0$ $S_{DS} = 2.5 g \quad z/h = 0.0$	
Component Type		Manufacturer	Model	Description	Notes	UUT
Receiver	Wuxi Tongli Air Conditioning Equipment Co., Ltd.	CYQ-A-1-1.1	Made of Steel; design pressure 42 bar (609 psi) Volume of 1.1 L		1	
		CYQ-A-1-1.7	Made of Steel; design pressure 42 bar (609 psi) Volume of 1.7 L		2	
Pressure Relief Valve	Mueller Refrigeration LLC	BO33752-650	Temp. range: -40 °C to 149 °C Max. operating pressure: 650 PSIG		1, 2	
Head Pressure Valve	Parker Hannifin Sporlan Division	LAC-4-295HP LS	HEAD PRESS V LAC4-295HP 20.3BAR		1, 2	
Compressor Crankcase Heater	nVent Thermal LLC	CCH-2C	208-277VAC; 60 W max. (8W/ft) Self-regulated heater. Insulation "Type A"		1, 2	
Receiver Heating Belt	Backer EHP INC	142-840008-012	Made of Aluminium 240VAC; 40 W		1, 2	

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2301207, Rev. 0



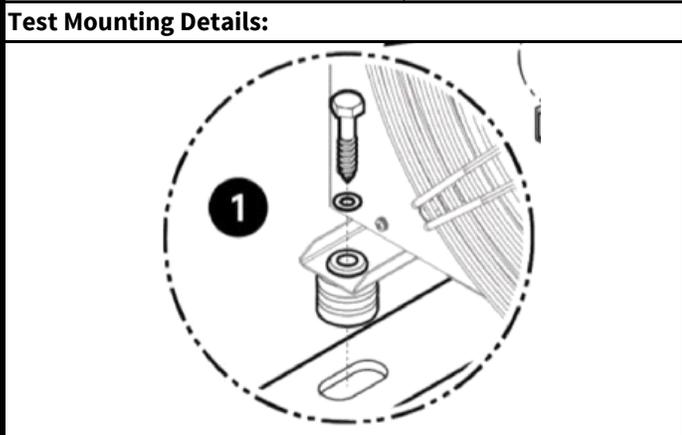
Manufacturer:	Vertiv Corporation	UUT 1
Model Line:	Outdoor Heat Exchanger (OHE)	
Model Number:	CUL030-E000A	
Serial Number:	N/A	
Test Report:		2301207-TR-001 (UUT1)

UUT Properties						
Weight (lbs.)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
120	39.0	14.5	20.0	20.52	24.91	32.19

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67
		2.5	0.0					

Product Construction Summary:	Test Mounting Details:
Carbon Steel Housing	

Options/Subcomponent Summary:	
Description	Part Number
Microchannel Condenser Coil	10041679
Check Valve	ACK-8; NRV12S02B
Compressor	SVB110FCDMC
Variable Frequency Driver (VFD)	MD520-2S1.2BS-INT
EC Fan	GTG040FUC15E
Receiver	CYQ-A-1-1.1
Pressure Relief Valve	BO33752-650
Head Pressure Valve	LAC-4-295HP LS
Compressor Crankcase Heater	CCH-2C
Receiver Heating Belt	142-840008-012



UUT1 was base mounted - isolated using anti-vibration rubber mounts to the fixture using four (4) 3/8" Grade 8 bolts and washers. Torqued to 20 ft/lbs. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 2301207, Rev. 0

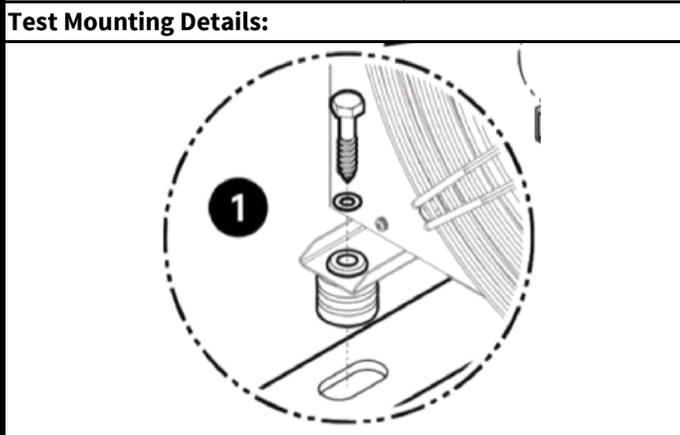
Manufacturer: Vertiv Corporation	UUT 2
Model Line: Outdoor Heat Exchanger (OHE)	
Model Number: CUL111-E000A	
Serial Number: N/A	
Test Report: 2301207-TR-001 (UUT2)	

UUT Properties						
Weight (lbs.)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
189	51.5	23.0	22.3	12.98	11.41	17.79

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67
		2.5	0.0					

Product Construction Summary: Carbon Steel Housing	Test Mounting Details:
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Options/Subcomponent Summary:	
Description	Part Number
Microchannel Condenser Coil	10041681
Check Valve	ACK-8; NRV12S02B
Compressor	SVB220FMGMC-L
Variable Frequency Driver (VFD)	MD520-2T2.2BS-INT
EC Fan	GTG050EUD19E
Receiver	CYQ-A-1-1.7
Pressure Relief Valve	BO33752-650
Head Pressure Valve	LAC-4-295HP LS
Compressor Crankcase Heater	CCH-2C
Receiver Heating Belt	142-840008-012



UUT2 was base mounted - isolated using anti-vibration rubber mounts to the fixture using four (4) 3/8" Grade 8 bolts and washers. Torqued to 20 ft/lbs.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.