



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY

APPLICATION #: OSP-0383

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Carrier Corporation

Manufacturer's Technical Representative: Anthony Molavi

Mailing Address: 9701 Old Statesville Road, Charlotte, NC 28269

Telephone: (704) 921-3976

Email: Anthony.Molavi@carrier.utc.com

Product Information

Product Name: Chillers

Product Type: Chillers - Air Cooled

Product Model Number: 30RB60 through 30RB390

General Description: 30RB is an air-cooled chiller, and includes modular combinations (see attached list).

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: Buehler Engineering, Inc

Contact Person: Gillian Montgomery

Mailing Address: 600 Q Street, Suite 200, Sacramento, CA 95811

Telephone: (916) 443-0303

Email: gmontgomery@buehlerengineering.com

Title: Senior Associate





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

Company Name: BUEHLER ENGINEERING, INC.
Name: Scott Hooker California License Number: S3937
Mailing Address: 600 Q St., Suite 200, Sacramento, CA 95811
Telephone: (916) 443-0303 Email: shooker@buehlerengineering.com

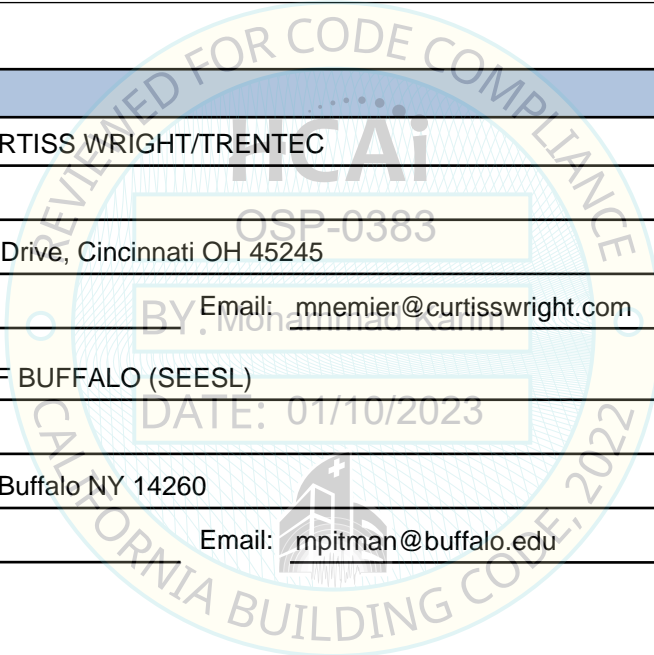
Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: QUALTECH/CURTISS WRIGHT/TRENTEC
Contact Person: Marie Nemier
Mailing Address: 4600 East Tech Drive, Cincinnati OH 45245
Telephone: (513) 528-7900 Email: mnemier@curtisswright.com

Company Name: UNIVERSITY OF BUFFALO (SEESL)
Contact Person: Mark Pitman
Mailing Address: 212 Ketter Hall, Buffalo NY 14260
Telephone: (716) 645-4377 Email: mpitman@buffalo.edu





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44

SDS (Design spectral response acceleration at short period, g) = 2.00

a_p (Amplification factor) = 1.0

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

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

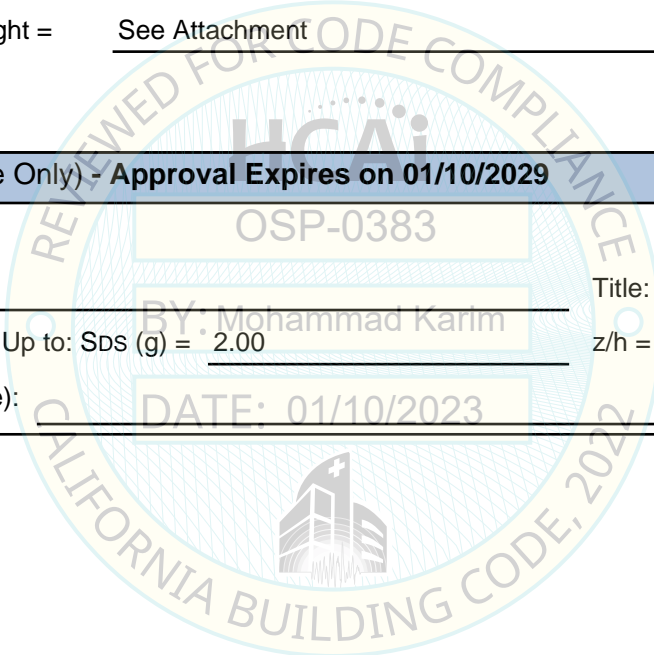
HCAI Approval (For Office Use Only) - Approval Expires on 01/10/2029

Date: 01/10/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.00 z/h = 1

Condition of Approval (if applicable): DATE: 01/10/2023





Special Seismic Certification
 HCAI Preapproval OSP-0383
 Carrier 30RB Product Line



Table 1. Certified Product List

Model Number	Nominal Tonnage	Module A	Module B	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Max Operating Weight (lbs)
30RB_060	60	-	-	UUT-1	95	89	90.5	4,616
30RB_070	70	-	-	Interpolated	95	89	90.5	4,799
30RB_080	80	-	-	Interpolated	95	89	90.5	5,082
30RB_090	90	-	-	UUT-2	142	89	90.5	5,449
30RB_090	90	-	-	Interpolated	142	89	90.5	6,656
30RB_100	100	-	-	Interpolated	142	89	90.5	6,879
30RB_110	110	-	-	Interpolated	142	89	90.5	7,243
30RB_120	120	-	-	Interpolated	189	89	90.5	8,543
30RB_130	130	-	-	Interpolated	189	89	90.5	9,010
30RB_150	150	-	-	Interpolated	189	89	90.5	10,139
30RB_160	160	-	-	Interpolated	236	89	90.5	11,472
30RB_170	170	-	-	Interpolated	236	89	90.5	11,807
30RB_190	190	-	-	Interpolated	283	89	90.5	13,460
30RB_210	210	-	-	Interpolated	283	89	90.5	15,181
30RB_225	225	-	-	Interpolated	283	89	90.5	15,514
30RB_250	250	-	-	Interpolated	330	89	90.5	17,157
30RB_275	275	-	-	Interpolated	377	89	90.5	18,845
30RB_300	300	-	-	UUT-3	424	89	90.5	16,893
30RB_315*	315	30RB_160	30RB_160	Interpolated	472	89	90.5	22,944
30RB_330*	330	30RB_170	30RB_160	Interpolated	472	89	90.5	23,279
30RB_345*	345	30RB_170	30RB_170	Interpolated	472	89	90.5	23,614
30RB_360*	360	30RB_190	30RB_170	Interpolated	519	89	90.5	25,267
30RB_390*	390	30RB_190	30RB_190	Interpolated	566	89	90.5	26,920

* Modular combinations (maybe attached on same base frame or installed as separate components).

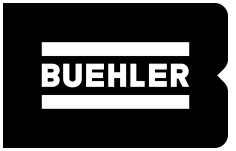


Table 2. Certified Sub-Component List

Pursuant to section 4.5 of AC 156, below is a list and rationale of major subassemblies/ components.

Compressor - Scroll Hermetic						
Part Number	Weight (lb)	Nominal capacity	Voltage	Manufacturer	Material	Tested / Interpolated
SH240A3ACC	237.6	20.0 tons	208/230V	Danfoss	Carbon Steel Housing	Interpolated
SH240A3ACC	237.6	20.0 tons	460V	Danfoss	Carbon Steel Housing	UUT-2
SH240A7ACC	237.6	20.0 tons	575V	Danfoss	Carbon Steel Housing	Interpolated
SH240A9ACC	237.6	20.0 tons	380V	Danfoss	Carbon Steel Housing	Interpolated
SH295A3ACE	244.2	25.0 tons	208/230V	Danfoss	Carbon Steel Housing	Interpolated
SH295A4ACE	244.2	25.0 tons	460V	Danfoss	Carbon Steel Housing	UUT-1
SH295A7ACE	244.2	25.0 tons	575V	Danfoss	Carbon Steel Housing	Interpolated
SH295A9ACE	244.2	25.0 tons	380V	Danfoss	Carbon Steel Housing	Interpolated
SH300A3ACC	336.6	25.0 tons	208/230V	Danfoss	Carbon Steel Housing	Interpolated
SH300A4ACC	336.6	25.0 tons	460V	Danfoss	Carbon Steel Housing	UUT-3
SH300A7ACC	336.6	25.0 tons	575V	Danfoss	Carbon Steel Housing	Interpolated
SH300A9ACC	336.6	25.0 tons	380V	Danfoss	Carbon Steel Housing	Interpolated

Condenser - Microchannel					
Part Number	Weight (lb)	Length x Height	Manufacturer	Material	Tested / Interpolated
00PPG000473501A	70 ea	80.4" x 44"	Delphi	Aluminum Tubing, Fins and Headers	UUT-1, UUT-3
00PPG000526901A	70 ea	80.4" x 44"	Danfoss	Aluminum Tubing, Fins and Headers	UUT-2

Condenser Fan Motor					
Part Number	Weight (lb)	Power (kW)	Manufacturer	Material	Tested / Interpolated
TEAO...7202A	45	2.3(460V)	Marathon	Carbon-Steel	UUT-1, UUT-2, UUT-3
TEAO...7202A	45	2.3(230V)	Marathon	Carbon-Steel	Interpolated
TEAO...7202A	45	2.3(380V)	Marathon	Carbon-Steel	Interpolated
TEAO...7202A	45	2.3(575V)	Marathon	Carbon-Steel	Interpolated

Difference in interpolated subcomponents is software only

Cooler - Direct Expansion Shell and Tube					
Part Number	Weight (lb)	Nominal Capacity	Manufacturer	Material	Tested / Interpolated
00PSN800000202A	715	28.2 gal	Carrier	Copper Tubes and Carbon Steel Shell	UUT-1
00PSN800000402A	856	31.3 gal	Carrier	Copper Tubes and Carbon Steel Shell	UUT-2
00PSN800000602A	970	45.8 gal	Carrier	Copper Tubes and Carbon Steel Shell	Interpolated
00PSN800097608A	1518	73.5 gal	Carrier	Copper Tubes and Carbon Steel Shell	Interpolated
00PSN800001002A	2382	86.6 gal	Carrier	Copper Tubes and Carbon Steel Shell	UUT-3

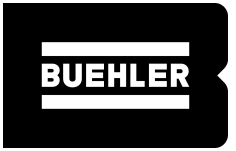


Table 2. Certified Sub-Component List

Single/Dual Speed Pump Options						
Part Number	Weight (lb)	Nominal capacity	Voltage	Manufacturer	Material	Tested / Interpolated
00PSN500727010A	450	10.0 hp	208/230V	Armstrong	Carbon Steel Housing	Interpolated
00PSN500727011A	450	10.0 hp	380V	Armstrong	Carbon Steel Housing	Interpolated
00PSN500727010A	450	10.0 hp	460V	Armstrong	Carbon Steel Housing	UUT-1
00PSN500727012A	450	10.0 hp	575V	Armstrong	Carbon Steel Housing	Interpolated

Difference in interpolated subcomponents is software only

Control Box Assembly					
Part Number	Weight (lb)	Nominal Capacity (Voltage/60Hz)	Manufacturer	Material	Tested / Interpolated
C30RB060	150	208-230, 380, 460 or 575	Schneider	Carbon-Steel	UUT-1
C30RB070	150	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB080	150	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB090	150	208-230, 380, 460 or 575	Schneider	Carbon-Steel	UUT-2
C30RB100	150	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB110	175	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB120	175	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB130	250	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB150	250	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB160	300	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB170	300	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB190	300	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB210	450	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB225	450	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB250	450	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB275	450	208-230, 380, 460 or 575	Schneider	Carbon-Steel	Interpolated
C30RB300	450	208-230, 380, 460 or 575	Schneider	Carbon-Steel	UUT-3

VFD					
Part Number	Weight (lb)	Power Range	Manufacturer	Material	Tested / Interpolated
HR46ZR001	31	10 hp	Danfoss	Aluminum	Extrapolated
HR46ZQ003	51	10 hp	Danfoss	Aluminum	Interpolated
HR46ZT002	51	20 hp	Danfoss	Aluminum	UUT-2
HR46ZV001	60	30 hp	Danfoss	Aluminum	UUT-2

Internal Seismic Strap Bracing					
Part Number	Weight (lb)	Capacity	Manufacturer	Material	Tested / Interpolated
00PSN000035500A-01	2	n/a	Metcam	Carbon Steel	UUT-1, UUT-2, UUT-3
00PSN000035500A-02	10	n/a	Metcam	Carbon Steel	UUT-1, UUT-2, UUT-3
00PSN000035500A-03	7	n/a	Metcam	Carbon Steel	UUT-1, UUT-2, UUT-3
00PSN000035500A-04	2	n/a	Metcam	Carbon Steel	UUT-1, UUT-2, UUT-3



Special Seismic Certification HCAI Preapproval OSP-0383 Carrier 30RB Product Line



Model Number Nomenclature

30RB – Air-Cooled AquaSnap® Chiller

Design Series

Nominal Sizes

060	110	170	275	360*
070	120	190	300	390*
080	130	210	315*	
090	150	225	330*	
100	160	250	345*	

Voltage

1 – 575-3-60	5 – 208/230-3-60
2 – 380-3-60	6 – 460-3-60

Condenser Coil Options

- – Aluminum Fin/Copper Tube
- 0 – Copper Fin/Copper Tube
- 1 – Aluminum Pre-Coat Fin/Copper Tube
- 2 – Aluminum E-Coat Fin/Copper Tube
- 3 – Copper E-Coat Fin/Copper Tube
- 4 – Microchannel (MCHX)
- 5 – E-Coat, Microchannel (MCHX)

Hydraulics Option

- – No Pump Installed
- 0 – Single Pump, 5 HP
- 1 – Single Pump, 7.5 HP
- 2 – Single Pump, 10 HP
- 3 – Single Pump, 15 HP
- 4 – Dual Pump, 5 HP
- 5 – Dual Pump, 7.5 HP
- 6 – Dual Pump, 10 HP Low Head
- 7 – Dual Pump, 10 HP High Head
- 8 – Dual Pump, 15 HP High Head
- 9 – Dual Pump, 10 HP
- A – Dual Pump, 15 HP
- B – Single Pump, 5 HP with VFD
- C – Single Pump, 7.5 HP with VFD
- D – Single Pump, 10 HP with VFD
- E – Single Pump, 15 HP with VFD
- F – Dual Pump, 5 HP with VFD
- G – Dual Pump, 7.5 HP with VFD
- H – Dual Pump, 10 HP High Head with VFD
- I – Dual Pump, 15 HP High Head with VFD
- J – Dual Pump, 10 HP with VFD
- K – Single Pump, 15 HP with VFD
- L – Dual Pump, 5 HP with VFD
- M – Dual Pump, 7.5 HP with VFD
- N – Dual Pump, 10 HP with VFD
- O – Dual Pump, 15 HP with VFD
- P – Special order designations

Cooler Options

- – Integral Cooler, CRN (Canada)
- 0 – Integral Cooler, Cooler Heater, CRN (Canada)
- 4 – Integral Cooler, Microchannel (MCHX), CRN (Canada)
- 5 – Integral Cooler, Cooler Heater, Microchannel (MCHX), CRN (Canada)
- G – Integral Cooler, no CRN
- H – Integral Cooler, Cooler Heater, no CRN
- K – Integral Cooler, Microchannel (MCHX), no CRN
- L – Integral Cooler, Cooler Heater, Microchannel (MCHX), no CRN
- R – Integral Cooler, Microchannel (MCHX), Heat Recovery, no CRN
- S – Integral Cooler, Cooler Heater, Microchannel (MCHX), Heat Recovery, no CRN
- T – Integral Cooler, Microchannel (MCHX), Heat Recovery, CRN (Canada)
- V – Integral Cooler, Cooler Heater, Microchannel (MCHX), Heat Recovery, CRN (Canada)

LEGEND

- CRN – Canadian Registration Number
- EMI – Energy Management Module
- GF – Ground Fault Interrupting Convenience Outlet
- LO – Local Operation Network
- SC – Short Circuit Current Rating
- VFD – Variable Frequency Device
- XL – Across-the-Line Start

Refer to the Unit Sizes and Modular Combinations table below.
NOTE: A 2 in position 11 indicates a special order machine. Digits following 0 are omitted.

UNIT SIZES AND MODULAR COMBINATIONS

UNIT SIZE	NOMINAL TONS	NOMINAL kW	MODULE A	MODULE B	UNIT SIZE	NOMINAL TONS	NOMINAL kW	MODULE A	MODULE B
060	60	210	—	—	190	190	667	—	—
070	70	245	—	—	210	210	737	—	—
080	80	280	—	—	225	225	791	—	—
090	90	315	—	—	250	250	879	—	—
100	100	350	—	—	275	275	967	—	—
110	110	385	—	—	300	300	1055	—	—
120	120	421	—	—	315	315	1107	160	160
130	130	456	—	—	330	330	1160	170	160
150	150	526	—	—	345	345	1213	170	170
160	160	562	—	—	360	360	1266	190	170
170	170	597	—	—	390	390	1370	190	190

Quality Assurance
Certified to ISO 9001

UUT-1 Test Summary

Testing Lab: Univ. at Buffalo
 Testing Report: UB CSEE/SEESL-2010-11 dated November 18, 2010
 Testing Unit Num: UUT1

Model Number	Tonnage	Operating Weight (lbs)	Mounting	Excitation Direction	Frequency* (Hz)	Length (in)	Width (in)	Height (in)
30RBB06064B4---L	60	4,616	Rigid Mount at Base	X	9.0	95	89	90.5
				Y	8.4			
				Z	11.1			

* Frequencies are for units prior to ICC ES AC-156 testing.
 Model Numbers are based on nomenclature from the 2009 Catalog

Identification No.	Attachment Method	Seismic Parameters							
		Building Code	Test Criteria	S _{ds} (g)	z/h	Horizontal		Vertical	
						A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
30RBB06064B4---L	Hard mount with (4) 3/4" Ø A325 bolts	CBC 2022	AC 156	2.00	1.0	3.2g	2.4g	1.33g	0.54g



Figure 1: Unit on the shake table

Notes: The UUTs were full of contents during the test.
 After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

UUT-1 Summary Sub-Component List Tested

Sub-Component	Part Number	Manufacturer	Material
Compressor- Scroll Hermetic	SH295A4ACE	Danfoss	Carbon Steel Housing
Condenser - Microchannel	00PPG000473501A	Delphi	Aluminum Tubing, Fins and Headers
Condenser - Fan Motor	00PPG000007202A	Marathon	Carbon-Steel
Cooler - Direct Expansion Shell and Tube	00PSN800000202A	Carrier	Copper Tubes and Carbon Steel Shell
Pump	00PSN500727113A	Armstrong	Carbon Steel Housing
Control Box Assembly	C30RB060	Schneider	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-01	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-02	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-03	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-04	Metcam	Carbon-Steel

UUT-2 Test Summary

Testing Lab: QualTech NP
Testing Report: Q1402.00 dated January 31, 2014
Testing Unit Num: n/a

Model Number	Tonnage	Operating Weight (lbs)	Mounting	Excitation Direction	Frequency* (Hz)	Length (in)	Width (in)	Height (in)
30RBE09064-LH--3	90	5,449	Rigid Mount at Base	X	13.6	142	89	90.5
				Y	35.0			
				Z	20.3			

* Frequencies are for units prior to ICC ES AC-156 testing.

Model Numbers are based on nomenclature from the 2015 Catalog

Identification No.	Attachment Method	Seismic Parameters							
		Building Code	Test Criteria	S _{DS} (g)	z/h	Horizontal		Vertical	
						A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
30RBE09064-LH--3	Hard mount with (4) 3/4" Ø A325 bolts	CBC 2022	AC 156	2.00	1.0	3.2g	2.4g	1.33g	0.54g



Figure 2: Unit on the shake table

Notes: The UUTs were full of contents during the test.
After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

UUT-2 Summary Sub-Component List Tested

Sub-Component	Part Number	Manufacturer	Material
Compressor- Scroll Hermetic	SH240A4ACC	Danfoss	Carbon Steel Housing
Condenser - Microchannel	00PPG000526901A	Danfoss	Aluminum Tubing, Fins and Headers
Condenser - Fan Motor	00PPG000007202A	Marathon	Carbon-Steel
Cooler - Direct Expansion Shell and Tube	00PSN800000402A	Carrier	Copper Tubes and Carbon Steel Shell
Control Box Assembly	C30RB090	Schneider	Carbon-Steel
Fan VFD	HR46ZV001 HR46ZT002	Danfoss	Aluminum
Internal Seismic Strap Bracing	00PSN000035500A-01	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-02	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-03	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-04	Metcam	Carbon-Steel

UUT-3 Test Summary

Testing Lab: Univ. at Buffalo
 Testing Report: No. UB CSEE/SEESL-2010-11 dated November 18, 2010
 Testing Unit Num: UUT2

Model Number	Tonnage	Operating Weight (lbs)	Mounting	Excitation Direction	Frequency* (Hz)	Length (in)	Width (in)	Height (in)
30RBBB30064-4--L	300	16,893	Rigid Mount at Base	X	6.5	424	89	90.5
				Y	3.9			
				Z	8.4			

* Frequencies are for units prior to ICC ES AC-156 testing.
 Model Numbers are based on nomenclature from the 2009 Catalog

Identification No.	Attachment Method	Seismic Parameters							
		Building Code	Test Criteria	S _{ds} (g)	z/h	Horizontal		Vertical	
						A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
30RBBB30064-4--L	Hard mount with (12) 3/4" Ø A325 bolts	CBC 2022	AC 156	2.00	1.0	3.2g	2.4g	1.33g	0.54g



Figure 3: Unit on the shake table

Notes: The UUTs were full of contents during the test.
 After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

UUT-3 Summary Sub-Component List Tested

Sub-Component	Part Number	Manufacturer	Material
Compressor- Scroll Hermetic	SH300A4ACC	Danfoss	Carbon Steel Housing
Condenser - Microchannel	00PPG000473501A	Delphi	Aluminum Tubing, Fins and Headers
Condenser - Fan Motor	00PPG000007202A	Marathon	Carbon-Steel
Cooler - Direct Expansion Shell and Tube	00PSN800001002A	Carrier	Copper Tubes and Carbon Steel Shell
Control Box Assembly	C30RB300	Schneider	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-01	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-02	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-03	Metcam	Carbon-Steel
Internal Seismic Strap Bracing	00PSN000035500A-04	Metcam	Carbon-Steel