APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0180 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: AAON, Inc.

Manufacturer's Technical Representative: Konnor Buxton

Mailing Address: 2425 S. Yukon Ave, Tulsa, OK 74107

Telephone: 918-382-6446 Email: KonnorB@AAON.com

Product Information

Product Name: RQ, RN Series Rooftop HVAC Units

Product Type: Packaged Rooftop HVAC

Product Model Number: RQ, RN-A, RN-B, RN-C, RN-D (see certified product matrices)
(List all unique product identification numbers and/or part numbers)

General Description: 2" foam injected galvanized steel panel cabinets w/ internal and external components as outlined in certified product matrices

Mounting Description: Base mounted – rigid supported by structure or curb mounted. Curb mounted on: ≤ 24" tall solid bottom curb; ≤ 37" final filter curb; ≤ 33" horizontal discharge curb

Applicant Information

Applicant Company Name: TRU Compliance, LLC

Contact Person: Matthew Tobolski, PhD, SE

Mailing Address: 960 SW Disk Dr., Suite 104, Bend, OR 97702

Telephone: 844.878.0200 Email: mtobolski@trucompliance.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: 10/15/2016

Title: President Company Name: TRU Compliance, LLC

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

Company Name: TRU Compliance, LLC

Name: Matthew Tobolski, PhD, SE California License Number: S5648

Mailing Address: 960 SW Disk Dr., Suite 104, Bend, OR 97702

Telephone: 844.878.0200 Email: mtobolski@trucompliance.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: Pacific Earthquake Engineering Research Center (PEER)

Contact Name: Clement B. Barthes

Mailing Address: 1301 South 46th St., Bldg. 420, Richmond, CA 94804

Telephone: (510) 642-3437 Email: peer_center@berkeley.edu

Company Name: Clark Dynamic Test Lab

Contact Name: Robert Francis

Mailing Address: 1801 Route 51, Jefferson Hills, PA 15025

Telephone: (412) 387-1004 Email: rfrancis@clarktesting.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.87

S_{DS} (Design spectral response acceleration at short period, g) = 2.5

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachment A

Overall dimensions and weight (or range thereof) = See Attachment A

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): Attachment A

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

Signature: _____ Date: 11/15/16

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.5 z/h = 1.0

Condition of Approval (if applicable): _____

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units

TABLE 1

Certified Product Construction Summary:
2" foam injected galvanized steel panel construction.

Certified Options Summary:
Vertical or horizontal discharge and return. Interior corrosion protection. Single or three phase 208V, 230V or 460V.
AAON supplied curbs: Up to 24" solid bottom curb, Up to 37" final filter curb, Up to 33" horizontal discharge curb

Mounting Configuration:
Base mounted - rigid. Rigid mounted to supporting structure or curb mounted
Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2016 ***Seismic Certification Limits:*** S_{DS} = 2.5 g z/h=1.0 S_{DS} = 2.5 g z/h=0.0 I_P = 1.5

Model Line	Model	Dimensions (in)			Max Wt (lb)	Notes	UUT
		Depth	Width	Height			
RQ	RQ-002	82.0	44.0	28.0	1,400		7
	RQ-003	82.0	44.0	28.0	1,400		1
	RQ-004	82.0	44.0	28.0	1,400		Interp
	RQ-005	82.0	44.0	28.0	1,400		Interp
	RQ-006	82.0	44.0	28.0	1,400		3,5
RN Cabinet A	RN-006	82.0	57.0	44.0	1,950		Interp
	RN-007	82.0	57.0	44.0	1,950		Interp
	RN-008	82.0	57.0	44.0	1,950		Interp
	RN-010	82.0	57.0	44.0	1,950		6
RN Cabinet B	RN-009	88.0	72.0	50.0	3,000		Interp
	RN-011	88.0	72.0	50.0	3,000		Interp
	RN-013	88.0	72.0	50.0	3,000		Interp
	RN-015	88.0	72.0	50.0	3,000		Interp
RN Cabinet C	RN-016	110.0	78.0	59.0	4,300		Interp
	RN-018	110.0	78.0	59.0	4,300		Interp
	RN-020	110.0	78.0	59.0	4,300		Interp
	RN-025	110.0	78.0	59.0	4,300		Interp
	RN-030	110.0	78.0	59.0	4,300		2,4,8,11
RN Cabinet D	RN-026	203.5	99.8	63.8	10,000		Interp
	RN-031	203.5	99.8	63.8	10,000		Interp
	RN-040	203.5	99.8	63.8	10,000		Interp
	RN-050	203.5	99.8	63.8	10,000		Interp
	RN-060	203.5	99.8	63.8	10,000		Interp
	RN-070	203.5	99.8	63.8	10,000		9,10

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Fans

TABLE 2

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Diam	Width	Blades				
Plenum Fan Belt Drive (ACME)	10"	11	8	12		Aluminum		Extrap
	12"	12	12.2	12		Aluminum		Extrap
	13.5"	13.5	3	12		Aluminum		Extrap
	15"	15	5.2	12		Aluminum		5
	17"	17	3.8	12		Aluminum		Interp
	18.5"	18.5	6.3	14		Aluminum		Interp
	22"	22	4.9	12		Aluminum		11
Plenum Fan Direct Drive (ACME)	10"	11	8	12		Aluminum		Extrap
	12"	12	12.2	12		Aluminum		6
	13.5"	13.5	3	12		Aluminum		Interp
	15"	15	5.2	12		Aluminum		1,6
	17"	17	3.8	12		Aluminum		Interp
	18.5"	18.5	6.3	14		Aluminum		1,3,5,7
	22"	22	4.9	12		Aluminum		2,4,8,11
	24"	24	5.6	14		Aluminum		8
	27"	27	6.1	14		Aluminum		4
	30"	31	6.8	14		Aluminum		9,10
Axial Flow Fan (Multiwing)	16"	16	0.3	4		Steel	Adjustable blade	3,7
	22"	22	0.3	5		Steel	Adjustable blade	2
Condenser Fan (Revcor)	30"	30	0.5	2		Steel		2,5,8,11
	30"	30	0.5	3		Steel		2,5,8,11

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SPECIAL SEISMIC CERTIFICATION
EXEMPT SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Fan Motors (≤ 20HP)

TABLE 3

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Similar Tested Model	Exemption Justification	UUT
Fan Motors	Genteq	1/6 HP			7
		1/5 HP			Interp
		1/4 HP			Interp
		1/3 HP			Interp
		1/2 HP			3
		3/4 HP			Interp
		1 HP			1,8
		1.5 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Exempt
		2 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Exempt
	SN-Tech	1/4 HP			1
		1/3 HP			5
		1/2 HP			Interp
		3/4 HP			Interp
		1 HP			7,8
		1.5 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Interp
		2 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Interp
	AO Smith	1/4 HP			Extrap
		1/3 HP			Extrap
		1/2 HP			Extrap
		3/4 HP			9
		1 HP			2,3,11

SPECIAL SEISMIC CERTIFICATION
EXEMPT SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Fan Motors (≤ 20HP)

TABLE 3

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Similar Tested Model	Exemption Justification	UUT
Fan Motors	Emerson	1/4 HP			Extrap
		1/3 HP			Extrap
		1/2 HP			Extrap
		3/4 HP			Extrap
		1 HP			2,11
		1.5 HP			Interp
		2 HP			5
		3 HP			Interp
		5 HP			2,11
		7.5 HP			2,11
	Baldor	1/4 HP			Extrap
		1/3 HP			Extrap
		1/2 HP			Extrap
		3/4 HP			Extrap
		1 HP			2,11
		1.5 HP			Interp
		2 HP			Interp
		3 HP			Interp
		5 HP			Interp
		7.5 HP			Interp
		10 HP			4,9
		15 HP			Interp
		20 HP			4,9,10

SPECIAL SEISMIC CERTIFICATION
EXEMPT SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Fan Motors (≤ 20HP)

TABLE 3

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Similar Tested Model	Exemption Justification	UUT
Fan Motors	Marathon	1/4 HP	Emerson 1HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		1/3 HP	Emerson 1HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		1/2 HP	Emerson 1HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		3/4 HP	Emerson 1HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		1 HP	Emerson 1HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		1.5 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Exempt
		2 HP	Emerson 2HP motor (UUT 5)	≤ 20 HP motor	Exempt
		3 HP	Emerson 5HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		5 HP	Emerson 5HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		7.5 HP	Emerson 7.5HP motor (UUT 2,11)	≤ 20 HP motor	Exempt
		10 HP			8
	US Motors	1/4 HP			Extrap
		1/3 HP			Extrap
		1/2 HP			Extrap
		3/4 HP			Extrap
		1 HP			6
		1.5 HP			Interp
		2 HP			Interp
		3 HP			6

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Compressors

TABLE 4

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Scroll Compressor	Copeland	ZP16K5E	16,000 BtuH, 230V or 460V		Extrap
		ZPS20K4E	20,000 BtuH, 230V or 460V	460V tested	1,7
		ZP24K5E	24,000 BtuH, 230V or 460V		Interp
		ZP30KCE	30,000 BtuH, 230V or 460V		Interp
		ZPS30K4E	30,000 BtuH, 230V or 460V		Interp
		ZP31K5E	31,000 BtuH, 230V or 460V		Interp
		ZPS31K4E	31,000 BtuH, 230V or 460V		Interp
		ZP40KCE	40,000 BtuH, 230V or 460V		Interp
		ZPS40KCE	40,000 BtuH, 230V or 460V		Interp
		ZP42K5E	42,000 BtuH, 230V or 460V		Interp
		ZPS49K5E	49,000 BtuH, 230V or 460V		Interp
		ZP51K5E	51,000 BtuH, 230V or 460V		Interp
		ZPS51K4E	51,000 BtuH, 230V or 460V		Interp
		ZP54K5E	54,000 BtuH, 230V or 460V		Interp
		ZP67KCE	67,000 BtuH, 230V or 460V		Interp
		ZP83KCE	83,000 BtuH, 230V or 460V		Interp
		ZP91KCE	91,000 BtuH, 230V or 460V		Interp
		ZP103KCE	103,000 BtuH, 230V or 460V		Interp
		ZP137KCE	137,000 BtuH, 230V or 460V		Interp
		ZP154KCE	154,000 BtuH, 230V or 460V	230V tested	8
		ZP182KCE	182,000 BtuH, 230V or 460V	460V tested	9,10

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Compressors

TABLE 4

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Digital Scoll Compressor	Copeland	ZPD34K5E	34,000 BtuH, 230V or 460V	460V tested	1
		ZPD42K5E	42,000 BtuH, 230V or 460V		Interp
		ZPD54K5E	54,000 BtuH, 230V or 460V		Interp
		ZPD61KCE	61,000 BtuH, 230V or 460V	230V tested	5
		ZPD83KCE	83,000 BtuH, 230V or 460V		Interp
		ZPD91KCE	91,000 BtuH, 230V or 460V		Interp
		ZPD103KCE	103,000 BtuH, 230V or 460V	460V tested	6
		ZPD137KCE	137,000 BtuH, 230V or 460V		Interp
		ZPD154KCE	154,000 BtuH, 230V or 460V	230V, 460V tested	2,8,11
		ZPD182KCE	182,000 BtuH, 230V or 460V	460V tested	9,10

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Variable Frequency Drives

TABLE 5

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Variable Frequency Drive	Yaskawa V1000	CIMR-VU2A0006FAA	1HP, 230/208V VFD		Extrap
		CIMR-VU4A0002FAA	1HP, 460V VFD		Extrap
		CIMR-VU2A0010FAA	2HP, 230/208V VFD		Extrap
		CIMR-VU4A0004FAA	2HP, 460V VFD		Extrap
		CIMR-VU2A0012FAA	3HP, 230/208V VFD		Extrap
		CIMR-VU4A0005FAA	3HP, 460V VFD		Extrap
		CIMR-VU2A0020FAA	5HP, 230/208V VFD		Extrap
		CIMR-VU4A0009FAA	5HP, 460V VFD		Extrap
		CIMR-VU2A0030FAA	7.5HP, 230/208V VFD		Interp
		CIMR-VU4A0018FAA	7.5/10HP, 460V VFD		2,11
		CIMR-VU2A0040FAA	10HP, 230/208V VFD		8
		CIMR-VU2A0056FAA	15HP, 230/208V VFD		Interp
		CIMR-VU4A0023FAA	15HP, 460V VFD		Interp
		CIMR-VU2A0069FAA	20HP, 230/208V VFD		Interp
		CIMR-VU4A0038FAA	20HP, 460V VFD		9,10

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SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Variable Frequency Drives

TABLE 5

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Variable Frequency Drive	Yaskawa E7	CIMR-E7U20P7	1HP, 230/208V VFD		Extrap
		CIMR-E7U40P7	1HP, 460V VFD		Extrap
		CIMR-E7U21P5	2HP, 230/208V VFD		Extrap
		CIMR-E7U41P5	2HP, 460V VFD		Extrap
		CIMR-E7U22P2	3HP, 230/208V VFD		Interp
		CIMR-E7U42P2	3HP, 460V VFD		6
		CIMR-E7U23P7	5HP, 230/208V VFD		Interp
		CIMR-E7U43P7	5HP, 460V VFD		Interp
		CIMR-E7U25P5	7.5HP, 230/208V VFD		Interp
		CIMR-E7U45P5	7.5HP, 460V VFD		Interp
		CIMR-E7U27P5	10HP, 230/208V VFD		Interp
		CIMR-E7U47P5	10HP, 460V VFD		Interp
		CIMR-E7U2011	15HP, 230/208V VFD		Interp
		CIMR-E7U49P0	15HP, 460V VFD		Interp
		CIMR-E7U2015	20HP, 230/208V VFD		Interp
		CIMR-E7U4011	20HP, 460V VFD		4
	Yaskawa Z1000	CIMR-Z4A0027	20HP, 460V VFD		10

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SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Variable Frequency Drives

TABLE 5

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Variable Frequency Drive	Yaskawa J1000	CIMR-JU2A0006BAA	230/208V VFD	1HP	Interp
		CIMR-JU4A0002BAA	460V VFD	1HP	3
		CIMR-JU2A0010BAA	230/208V VFD	2HP	5
		CIMR-JU4A0004BAA	460V VFD	2HP	Interp
		CIMR-JU2A0012BAA	230/208V VFD	3HP	Interp
		CIMR-JU4A0005BAA	460V VFD	3HP	Interp
		CIMR-JU2A0020BAA	230/208V VFD	5HP	Interp
		CIMR-JU4A0009BAA	460V VFD	5HP	Interp
		CIMR-JUA4A0011BAA	460V VFD	7.5HP	Extrap.

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Coils

TABLE 6

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Tube and Fin (AAON)	Tube and Fin	1 row	20.0	15.5	10	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	Extrap
	Tube and Fin	…	…	…	…	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	Extrap
	Tube and Fin	1 row	20.0	32.0	10	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	3
	Tube and Fin	1 row	20.6	31.7	10	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	1,5
	Tube and Fin	1 row	34.7	31.0	15	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	6
	Tube and Fin	1 row	51.0	48.0	32	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	2,11
	Tube and Fin	2 row	80.0	46.0	70	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	9
	Tube and Fin	2 row	39.0	27.0	80	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	4
	Tube and Fin	2 row	75.0	20.0	81	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	9
	Tube and Fin	2 row	51.0	50.7	140	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	4
	Tube and Fin	2 row	60.0	45.0	184	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	10
	Tube and Fin	3 row	21.0	36.0	32	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	1,7
	Tube and Fin	3 row	59.0	102.0	340	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	2
	Tube and Fin	4 row	21.0	36.0	41	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	5
	Tube and Fin	4 row	35.0	35.0	90	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	6
	Tube and Fin	4 row	34.7	77.5	115	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	5
	Tube and Fin	4 row	52.0	55.0	185	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	2,11
	Tube and Fin	4 row	120.0	48.0	215	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	9

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Coils

TABLE 6

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Tube and Fin (AAON)	Tube and Fin	6 row	25.0	15.6	32	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	3
	Tube and Fin	6 row	20.0	32.0	46	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	3
	Tube and Fin	6 row	52.0	55.0	248	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	8
	Tube and Fin	6 row	51.5	52.3	310	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	4
	Tube and Fin	6 row	90.0	30.0	330	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	9
	Tube and Fin	6 row	86.0	35.0	348	Copper tube, aluminum fin	.017-.049 tube, .006-.01 fin, 6-24 FPI	10
Microchannel (Dephi)	Microchannel		20.0	15.5	10	Aluminum	.012-.016 tube, 6-24 FPI	Extrap
	Microchannel		…	…	…	Aluminum	.012-.016 tube, 6-24 FPI	Extrap
	Microchannel		24.0	74.0	35	Aluminum	.012-.016 tube, 6-24 FPI	7
	Microchannel		…	…	…	Aluminum	.012-.016 tube, 6-24 FPI	Interp
	Microchannel		61	101.25	150	Aluminum	.012-.016 tube, 6-24 FPI	8

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Heat Exchangers

TABLE 7

Building Code: CBC 2016
Seismic Certification Limits: $S_{DS} = 2.5g$ $z/h = 1.0$; $S_{DS} = 2.5g$ $z/h = 0.0$; $I_P = 1.5$

Component Type	Manufacturer	Model	Description	Notes	UUT
Coaxial Condenser	Packless	COAX-2350-S	3-1/2 TON		1
		COAX-2500-S	5 TON		Interp
		COCX-2500-S	5 TON		Interp
		COAX-2600-S	6 TON		Interp
		COAX-2750-S	7-1/2 TON		Interp
		COCX-2750-S	7-1/2 TON		Interp
		COAX-3010-S	10 TON		Interp
		COCX-1507-S	10 TON		3
Brazed Plate Heat Exchanger	Alfa Laval	ACH70-50EQ	70x50HX		Extrap
		ACH70-64EQ	70x64HX		6
		ACH230-50DQ	230x50HX		Interp
		ACH230-74DQ	230x74HX		Interp
		ACH230-106DQ	230x106HX		10
Brazed Plate Heat Exchanger	SWEP	DP300X38/1P-MCM	300x38HX		Extrap
		DP300X54/1P-MCM	300x54HX		Extrap
		DP300X90/1P-MCM	300x90HX		4,10

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CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Electric Heaters

TABLE 8

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Coil Heaters (Tutco)	5 kW (208V-480V)	8.8	3.3	18.0	5	Carbon steel, Ni/Cr Wire	UUT: 2 cells, 240V	5
	5 kW (208V-480V)	8.8	3.3	25.3	8	Carbon steel, Ni/Cr Wire		Interp
	10 kW (208V-480V)	8.8	3.3	18.0	5	Carbon steel, Ni/Cr Wire	UUT: 3 cells, 240V	5
	10 kW (208V-480V)	8.8	3.3	25.3	8	Carbon steel, Ni/Cr Wire		Interp
	10 kW (208V-480V)	8.8	3.3	27.8	9	Carbon steel, Ni/Cr Wire		Interp
	10 kW (208V-480V)	8.8	3.3	31.6	10	Carbon steel, Ni/Cr Wire	UUT: 4 cells, 480V	8
	20 kW (208V-480V)	8.8	3.3	25.3	8	Carbon steel, Ni/Cr Wire	UUT: cells, 480V	9
	20 kW (208V-480V)	8.8	3.3	27.8	9	Carbon steel, Ni/Cr Wire		Interp
	20 kW (208V-480V)	8.8	3.3	31.6	10	Carbon steel, Ni/Cr Wire	UUT: 4 cells, 480V	8

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16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Gas Heaters

TABLE 9

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT
		Depth	Width	Height				
Gas Heater (AAON)	60 MBTU	29.0	28.0	20.8	170	Al or SS	3 tubes (UUT: Al)	1
	90 MBTU	37.3	23.8	19.8	165	Al or SS	5 tubes	Interp
	100 MBTU	29.0	28.0	20.8	195	Al or SS	3 tubes	Interp
	140 MBTU	29.0	28.0	20.8	220	Al or SS	7 tubes	Interp
	150 MBTU	37.3	23.8	19.8	195	Al or SS	5 tubes	Interp
	160 MBTU	29.0	28.0	20.8	235	Al or SS	8 tubes	Interp
	195 MBTU	36.0	40.0	21.6	255	Al or SS	6 tubes	Interp
	210 MBTU	37.3	23.8	19.8	290	Al or SS	7 tubes	Interp
	270 MBTU	50.7	22.0	21.4	250	Al or SS	1-6 tubes	Interp
	293 MBTU	36.0	40.0	21.6	300	Al or SS	9 tubes	Interp
	390 MBTU	36.0	40.0	21.6	33	Al or SS	12 tubes	Interp
	405 MBTU	50.7	22.0	21.4	290	Al or SS	1-3 & 1-6 tubes	Interp
	540 MBTU	22.0	22.0	21.4	580	Al or SS	2-6 tubes (UUT: SS)	2,11
	1080 MBTU	101.4	22.0	21.4	1160	Al or SS	24 tubes (UUT: SS)	10

SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX

16041-CR-001, rev. 0

TRU COMPLIANCE

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Table Description: Heat Wheels

TABLE 10

Building Code: CBC 2016
Seismic Certification Limits: S_{DS} = 2.5 g z/h = 1.0; S_{DS} = 2.5 g z/h = 0.0; I_P = 1.5

Component Type	Manufacturer	Model	Description	Notes	UUT
Heat Wheel	Air Exchange	ERC-2108	208/230, 1 Ph, 50/60 Hz		1,5
		ERC-3019C	208/230, 1 Ph, 50/60 Hz		Interp
		ERC-3623	460, 1 Ph, 60 Hz		Interp
		ERC-5245	208/230, 1 Ph, 50/60 Hz		4,8

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UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

Manufacturer: AAON

Model Line: RQ, RN Series Rooftop Units

UUT	Unit Description	Report Number	Testing Laboratory	S_{DS}	z/h	I_P
1	RQ-002-3-V-G79C-211	EL: 9730	Clark Testing	2.5	1.0	1.5
2	RN-030-3-0-E61S-7C2	EL: 9730	Clark Testing	2.5	1.0	1.5
3	RQ-006-3-V-0W9N-FJM	EL: 9730	Clark Testing	2.5	1.0	1.5
4	RN-030-3-0-0W9M-DJM	EL: 9730	Clark Testing	2.5	1.0	1.5
5	RQ-006-2-V-E61E-14A	EL: 9730	Clark Testing	2.5	1.0	1.5
6	RN-010-3-0-E79E-000	EL: 9730	Clark Testing	2.5	1.0	1.5
7	RQ-002-3-V-GA12-000	EL: 9730	Clark Testing	2.5	1.0	1.5
8	RN-030-2-0-EB19-19A	EL: 9730	Clark Testing	2.5	1.0	1.5
9	RN-070-3-0-EQ79-7C2	2011-0112-TR-001, r0	UC Berkeley	2.5	1.0	1.5
10	RN-070-3-0-0W9M-DJM	2011-0112-TR-001, r0	UC Berkeley	2.5	1.0	1.5
11	RN-030-3-0-E61T-7C2	2011-0112-TR-001, r0	UC Berkeley	2.5	1.0	1.5

Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET

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UUT 1

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RQ-002-3-V-G79C-211:FABC-D00-PJA-AH0-QD0AQBZ-00-000000MAX

Product Construction Summary:

2" foam injected galvanized steel panel construction. 18" galvanized steel solid bottom curb.

Options/Subcomponent Summary:

Unit Configuration: Water Source/Geothermal Heat Pump; **Refrigerant Style:** Copeland High Efficiency R-410A Digital Compressor; **Heating Type:** Natural Gas Aluminized; **Controls:** Micro Control Systems; **Fans:** ACME 15" Backward Curved Plenum Power Exhaust Fan w/ Genteq 1hp motor, ACME 19" Direct Drive Backwards Curved Plenum Supply Fan w/ SN-Tech 1/4 hp motor (All Aluminum Blade); **Coil:** AAON Copper Tube Aluminum Fin Evaporator and Hot Gas Reheat Coil. **Condenser:** Packless Coaxial; **Additional Components:** AAONAIRE Energy Recovery Wheel, 2" & 4" Pleated Filters, Balancing Valves, Water Flow Switch, Head Pressure Control, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1720	120.0	44.0	45.0	12.9	11.1	10.3

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base using (24) 3/8"-11 bolts. Weight shown includes unit, curb and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 2

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-030-3-0-E61S-7C2:CFGF-D0K-DRG-AF0-2DCC0BD-00-0000000AX

Product Construction Summary:
2" foam injected galvanized steel panel construction. 24" galvanized steel solid bottom curb.

Options/Subcomponent Summary:
Unit Configuration: Air Source Heat Pump; **Refrigerant Style:** Copeland R-410A Variable Capacity Scroll Compressor; **Heating Type:** LP Gas Stainless Steel, Modulating Hot Gas Reheat; **Controls:** Wattmaster; **Fans:** Multiwing 22” Direct Drive Axial Flow Power Return Fan w/ Emerson 5hp motor, ACME 22” Direct Drive Backwards Curved Plenum Supply fan w/ Emerson 7.5 hp motor, Revcor 30” Condenser Fan w/ AO Smith, Emerson & Baldor 1hp motors; **Coil:** AAON Copper Tube Aluminum Fin Evaporative and Condenser Coils; **Additional Components:** 2” & 4” Pleated Filters, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
4815	157.0	60.0	60.0	11.3	5.7	8.5

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base using (21) 3/8"-11 bolts. Weight shown includes unit, curb and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 3

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RQ-006-3-V-0W9N-FJM:BHNB-E0K-QJC-0BC-000B006-AE-000000M0X

Product Construction Summary:
2" foam injected galvanized steel panel construction.

Options/Subcomponent Summary:
Unit Configuration: Chilled Water Coil; **Refrigerant Style:** Air Handling Unit; **Heating Type:** AAON Copper Tube Aluminum Fin Hot Water Coil; **Controls:** Jace Controls; **Fans:** Multiwing 16” Direct Drive Axial Flow Power Exhaust fan w/ Genteq 1/2hp motor, ACME 19” Direct Drive Backwards Curved Plenum Supply w/ AO Smith 1hp motor. **Coil:** AAON Copper Tube Aluminum Fin Hot Water Coil; **Condenser:** Packless Coaxial; **Additional Components:** 4” Pleated Filters, Balancing Valves, Water Flow Switch, Head Pressure Control, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1360	120.0	44.0	45.0	15.6	18.2	>33

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to supplemental base frame using (32) #12 self-tapping screws.
Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

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UUT 4

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-030-3-0-0W9M-DJM:FADH-D00-DEM-0B0-000A0Y0-BE-000000M0X

Product Construction Summary:
2" foam injected galvanized steel panel construction. 37" galvanized steel final filter curb.

Options/Subcomponent Summary:
Unit Configuration: Chilled Water Coil; **Refrigerant Style:** Air Handling Unit; **Heating Type:** Hot Water/Steam Distributing Coil; **Coils:** AAON Copper Tube Aluminum Fin; **Controls:** Micro Control Systems; **Fans:** ACME 22" Backward Curved Plenum Power Exhaust Fan w/ Baldor w/ 10hp motor, ACME 27" Direct Drive Backwards Curved Plenum Supply fan w/ Baldor 20hp motor. **Additional Components:** AAONAIRE Energy Recovery Wheel, 4" Pleated Filters, Balancing Valves, Water Flow Switch, Brazed plate Condenser, Head Pressure Control, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3062	157.0	60.0	60.0	15.2	14.3	131.0

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base using (41) 3/8"-11 bolts. Weight shown includes unit, curb and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 5

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RQ-006-2-V-E61E-14A:FABD-DN0-QJD-AH0-QDEC0ND-00-0B00000AX

Product Construction Summary:
2" foam injected galvanized steel panel construction. 35.5" galvanized steel final filter curb.

Options/Subcomponent Summary:
Unit Configuration: Air Source Heat Pump; **Refrigerant Style:** Copeland High Efficiency R-410A Variable Capacity Scroll Compressor; **Heating Type:** Tutco Electric Heat; **Controls:** Wattmaster; **Fans:** ACME 15" Backward Curved Plenum Return Fan w/ Emerson 2hp motor, ACME 19" Direct Drive Backwards Curved Plenum Supply fan w/ Emerson 2hp motor, Revcor 30" Condenser fan w/ SN-Tech 1/3hp motor; **Coil:** AAON Copper Tube Aluminum Fin Evaporative and Condenser Coil; **Additional Components:** AAONAIRE Energy Recovery Wheel, 2" & 4" Pleated Filters, Modulating Hot Gas Reheat, Economizer, 230V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2300	120.0	44.0	45.0	15.0	17.4	11.5

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base using (24) 3/8"-11 bolts. Weight shown includes unit, curb and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

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UUT 6

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-010-3-0-E79E-000:BCAE-DMK-DBC-AFC-QDCD00D-00-0B0000MAX

Product Construction Summary:
2" foam injected galvanized steel panel construction. 24" galvanized steel solid bottom curb.

Options/Subcomponent Summary:
Unit Configuration: Water Source/Geothermal Heat Pump; **Refrigerant Style:** Copeland High Efficiency R-410A Two-Step Compressor; **Heating Type:** No Heating; **Controls:** Wattmaster; **Fans:** Multiwing 12”x9” Forward Curved Plenum Power Exhaust Fan w/ US Motors 3hp motor, ACME 15” Direct Drive Backwards Curved Plenum Supply fan w/ US Motors 1hp motor; **Additional Components:** Economizer w/ Power Exhaust, 2” & 4” Pleated Filters, Balancing Valves, Water Flow Switch, Head Pressure Control, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2125	120.0	58.0	45.0	12.4	17.7	16.1

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to table using (24) 3/8"-11 bolts. Weight shown includes unit, curb and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

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UUT 7

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RQ-002-3-V-GA12-000:BJNZ-D00-PKC-BAC-20DA00D-00-00G0000AX

Product Construction Summary:
2" foam injected galvanized steel panel construction.

Options/Subcomponent Summary:
Unit Configuration: Air Cooled Delphi Microchannel Aluminum Condenser Coil & AAON Copper Tube Aluminum Fin Std. Evaporative Coil; **Refrigerant Style:** Copeland High Efficiency R-410A Two-Step Compressor; **Heating Type:** No Heating; **Controls:** Wattmaster Controls; **Fans:** Multiwing 16” Direct Dive Axial Flow Power Exhaust w/ Genteq 0.167 hp motor, ACME 19” Direct Drive Backwards Curved Plenum w/ SN-tech 1hp motor, **Additional Components:** Economizer w/ Power Exhaust, Metal Mesh Pre-Filter, 4” Pleated Filters, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1250	120.0	44.0	45.0	14.7	17.7	11.5

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to supplemental base frame using (32) #12 self-tapping screws.
Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

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UNIT UNDER TEST (UUT) SUMMARY SHEET

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UUT 8

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-030-2-0-EB19-19A:BCDH-D00-DDH-BBC-20EE00D-00-0BG0000AX

Product Construction Summary:
2" foam injected galvanized steel panel construction.

Options/Subcomponent Summary:
Unit Configuration: Air cooled Delphi Aluminum Microchannel Condenser & AAON Copper Tube Aluminum Fin Evaporative Coil; **Refrigerant Style:** Copeland R-410A Variable Capacity Scroll Compressor; **Heating Type:** Tutco Electric Heat; **Controls:** Jace Controls; **Fans:** ACME 22" Backward Curved Plenum Power Exhaust w/ Marathon 10hp motor, ACME 24" Direct Drive Backwards Curved Plenum Supply fan w/ Marathon 10hp motor, Revcor 30" Condenser fans w/ Genteq & SN-Tech 1hp motors; **Additional Components:** Metal Mesh Pre-filter, 4" Pleated Filters, Economizer, 230V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3530	157.0	60.0	60.0	9.1	13.0	32.9

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to supplemental base frame using (12) #12 self-tapping screws and (4) 3/8"-11 bolts.
Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 9

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-070-3-0-EQ79-7C2

Product Construction Summary:
2" foam injected galvanized steel panel construction.

Options/Subcomponent Summary:
Unit Configuration: Air Cooled Condenser, 6 Row Evaporator Coil and Return Air Bypass; **Refrigerant Style:** Copeland R-410A Variable Capacity Scroll Compressor (ZP and ZPD); **Coils:** AAON 6 row and 2 row tube and fin; **Heating Type:** Tutco Electric Heat; **Controls:** Wattmaster Controls; **Fans:** 20 HP Baldor fan motor; 10 HP Baldor fan motor; ¾ HP AO Smith fan motor; 30" backward curved ACME Plenum fans; **Additional Components:** Yaskawa V1000 VFD, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
9291	203.5	99.8	63.8	13.5	10.3	14.6

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to supplemental base frame using (50) 5/16" hex head bolts bolts.
Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 10

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-070-3-0-0W9M-DJM

Product Construction Summary:
2" foam injected galvanized steel panel construction. 30" galvanized steel final filter curb.

Options/Subcomponent Summary:
Unit Configuration: Air handling unit, Chilled Water; **Refrigerant Style:** Copeland R-410A Variable Capacity Scroll Compressor (ZP and ZPD); **Coils:** AAON 6 row and 2 row tube and fin; **Heating Type:** 1080MBTU AAON Gas Heat; **Controls:** Wattmaster Controls; **Fans:** 20 HP Baldor fan motor; 30" backward curved ACME Plenum fans; **Additional Components:** Yaskawa V1000 VFD and Z1000 VFD, SWEP DP300x90 and Alfa Laval ACH230-106 Condenser, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
9533	203.8	100.3	94.3	8.5	6.8	9.2

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base frame using (50) 5/16" hex head bolts bolts. Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16041-CR-001, rev. 0

UUT 11

Manufacturer: AAON
Model Line: RQ, RN Series Rooftop Units
Model Number: RN-030-3-0-E61T-7C2

Product Construction Summary:

2" foam injected galvanized steel panel construction. 33" galvanized steel horizontal discharge curb.

Options/Subcomponent Summary:

Unit Configuration: Air Source Heat Pump; **Refrigerant Style:** Copeland R-410A Variable Capacity Scroll Compressor; **Heating Type:** LP Gas Stainless Steel, Modulating Hot Gas Reheat; **Controls:** Wattmaster; **Fans:** Multiwing 22” Direct Drive Axial Flow Power Return Fan w/ Emerson 5hp motor, ACME 22” Direct Drive Backwards Curved Plenum Supply fan w/ Emerson 7.5 hp motor, Revcor 30” Condenser Fan w/ AO Smith, Emerson & Baldor 1hp motors (All Aluminum Blade); **Coil:** AAON Copper Tube Aluminum Fin Evaporative and Condenser Coils; **Additional Components:** 2” & 4” Pleated Filters, Economizer, 460V

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
4571	146.0	101.1	92.9	9.5	7.2	8.5

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 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.68	0.67
		2.5	0.0	1.5	2.50	1.00	1.68	0.67

Test Mounting Details:

Unit mounted to curb using standard manufacturer provided brackets. Curb mounted to supplemental base frame using (34) 5/16" hex head bolts bolts. Weight shown includes unit and supplemental base frame.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.