APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0923

HCAI Special Seismic Certification Preapproval (OSP)

Type: [X] New [ ] Renewal

Manufacturer Information

Manufacturer: Carrier Corporation

Manufacturer's Technical Representative: Adam Jones

Mailing Address: 6304 Carrier Parkway, East Syracuse, NY 13057

Telephone: (315) 432-3978 Email: adam.jones@carrier.com

Product Information

Product Name: Weather Master High Efficiency Gas Heat/Electric Cooling and Hybrid Heat Units

Product Model Number(s): 48GE, 50GE, 48QE, 50QE

Product Category: Air Conditioning Units

Product Sub-Category: Air Conditioning Units - Packaged

General Description: Packaged Air Handler Units with CanFab Accessories

Mounting Description: Rigid Curb and Isolated Curb Base 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: The VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

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

Title: VMC Group

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CALIFORNIA BUILDING CODE, 2022

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

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: S2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (800) 569-8423 Email: ken.tarlow@thevmcgroup.com

Certification Method

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

☐ Other (Please Specify):

Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Josh Sailer

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

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

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DATE: 11/16/2026
CALIFORNIA BUILDING CODE, 2025

Seismic Parameters

Certified Response Spectral Acceleration Factors:(F_p/W_p)

Horizontal	(A Flx-H), g=	3.20	(A Rig-H), g=	2.15
Vertical	(A Flx-V), g=	1.33	(A Rig-V), g=	0.53

S_{DS} (Design spectral response acceleration at short period, g) = 2.0

Hf (Force amplification height factor) = 3.5

Ru (Structure ductility redution factor) = 1.3

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

HCAI Approval (For Office Use Only) - Approval Expires on 11/16/2032

Date: 11/16/2026

Name: Mohammad Karim Title: Supervisor, Health Facilities

Condition of Approval (if applicable):

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DATE: 11/16/2026
CALIFORNIA BUILDING CODE, 2025

Table 1- Certified Components - Packaged AC Units

Product Line	Model Number	Nominal Cooling Capacity [tons]	Model with Economizer				Model with Power Exxhuast				Accessory Configuration[2]	Mounting	UUT
			Max Dimensions[3] [in]			Max Weight[3]	Max Dimensions[3] [in]			Max Weight[3]			
			Length	Width	Height		Length	Width	Height				
48GE[1]	48GExx04	3	74	66	33	626	74	80	33	722	Long Side Mounted	Isolated / Rigid Curb	Extrapolated
	48GExx05	4	74	66	33	646	74	80	33	745			Extrapolated
	48GEGN06M6M5A0APC0	5	74	63	62	1,150	-	-	-	-		Rigid Curb	UUT-03B
	48GEGN06M6M5A0APC0	5	-	-	-	-	74	80	62	1,318			UUT-03A
	48GExx07	6	88	79	41	870	88	93	41	1,106		Isolated / Rigid Curb	Interpolated
	48GExx08	8	88	79	49	988	88	93	49	1,229			Interpolated
	48GExx09	9	88	79	49	988	88	93	49	1,229			Interpolated
	48GExx12	10	88	79	49	1,129	88	94	49	1,370			Interpolated
	48GExx14	13	116	88	57	1,497	116	106	57	1,750			Interpolated
	48GExx17	15	35	86	49	2,131	185	86	49	2,624	Short Side Mounted		Interpolated
	48GExx20	18	35	86	49	2,368	199	86	49	2,861			Interpolated
	48GExx24	20	35	86	57	2,600	192	86	57	3,103			Interpolated
	48GExx28	25	35	86	57	2,783	208	86	57	3,286			Interpolated
50GE[1]	50GExx04	3	74	66	33	581	74	80	33	677	Long Side Mounted		Extrapolated
	50GExx05	4	74	66	33	601	74	80	33	700			Extrapolated
	50GExx06	5	74	66	41	646	74	80	41	745			Extrapolated
	50GExx07	6	88	79	41	809	88	94	41	1,045			Interpolated
	50GExx08	8	88	79	49	925	88	94	49	1,166			Interpolated
	50GExx09	9	88	79	49	925	88	94	49	1,166			Interpolated
	50GExx12	10	88	79	49	1,066	88	94	49	1,307			Interpolated
	50GExx14	13	116	88	57	1,420	116	106	57	1,673			Interpolated
	50GExx17	15	163	86	49	2,004	185	86	49	2,497	Short Side Mounted		Interpolated
	50GExx20	18	176	86	49	2,240	199	86	49	2,733			Interpolated
	50GExx24	20	176	86	57	2,563	192	86	57	3,066			Interpolated
	50GExx28	25	193	86	57	2,656	208	86	57	3,159			Interpolated

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Notes:

1. GE models are the Low NOX version of GEQ and QE models.
2. Only difference in long side vs. short side mounting is the accessory mounting location; the base model is the same
3. Test unit dimensions and weight include Curb

Table 1- Certified Components - Packaged AC Units, Continued

Product Line	Model Number	Nominal Cooling Capacity [tons]	Model with Economizer				Model with Power Exxhuast				Accessory Configuration[2]	Mounting	UUT
			Max Dimensions[3] [in]			Max Weight[3]	Max Dimensions[3] [in]			Max Weight[3]			
			Length	Width	Height		Length	Width	Height				
50GEQ	50GEQx04	3	75	66	41	658	75	80	41	757	Long Side Mounted	Isolated / Rigid Curb	Interpolated
	50GEQx05	4	75	66	41	685	75	80	41	784			Interpolated
	50GEQx06	5	75	66	41	687	75	80	41	786			Interpolated
	50GEQx07	6	88	79	49	871	88	94	49	1,112			Interpolated
	50GEQx08	8	88	79	49	907	88	94	49	1,148			Interpolated
	50GEQx09	9	88	79	49	1,042	88	94	49	1,283			Interpolated
	50GEQx12	10	116	88	57	1,326	116	106	57	1,579			Interpolated
	50GEQx17	15	121	86	49	1,987	199	86	49	2,480	Short Side Mounted		Interpolated
	50GEQx24	20	121	86	57	2,417	208	86	57	2,920			Interpolated
	50GEQx28	25	121	86	57	2,485	208	86	57	2,988			Interpolated
48QE	48QExx04	3	74	66	41	715	74	80	41	814	Long Side Mounted		Interpolated
	48QESM05M6M5A3AM10	4	74	66	41	742	75	80	62	1,280		Rigid Curb	UUT-01
	48QExx06	5	74	66	41	744	74	80	41	843		Isolated / Rigid Curb	Interpolated
	48QExx07	6	88	79	49	934	88	93	49	1,175			Interpolated
	48QExx08	8	88	79	49	970	88	93	49	1,211			Interpolated
	48QExx09	9	88	79	49	1,105	88	94	49	1,346			Interpolated
	48QExx12	10	116	88	57	1,403	116	106	57	1,656			Interpolated
	48QExx17	15	176	86	57	2,350	199	86	57	2,843	Short Side Mounted		Interpolated
	48QExx24	20	193	86	57	2,742	208	86	57	3,245			Interpolated
	48QESM28M6M5A3AM10	25	211	87	82	4,170	-	-	-	-		Isolated Curb	UUT-02B
	48QESM28M6M5A3AM10	25	-	-	-	-	211	87	82	4,610			UUT-02A

Notes:

1. GE models are the Low NOX version of GEQ and QE models.
2. Only difference in long side vs. short side mounting is the accessory mounting location; the base model is the same
3. Test unit dimensions and weight include Curb

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Figure 1: Model Nomenclature Guide

Sample Model Number: ABCDEFGHI-JKLMN				
Character	**Category**	**Allowable Value**	**Description**	**UUT**
A	Unit Heat Type	48	Gas Heat Packaged Rooftop	UUT-01, UUT-02A,B, UUT-03A,B
		50	Electric Cooling/Electric Heat Packaged Rooftop	Extrapolated
B	Model Series - Weather Master	GE	High Efficiency Puron Advance	UUT-03A,B
		QE	Mid Tier Hybrid Heat with Puron Advance	UUT-01, UUT-02A,B
C	Heat Size/Type	-	No Heat	Extrapolated
		A	Low Electrical Heat	Extrapolated
		G	ULTRA low Nox, Low Gas Heat	UUT-03A,B
		Q	Heat Pump	Extrapolated
		S	Low Gas Heat, Stainless Steel Heat Exchanger	UUT-01, UUT-02A,B
D	Refrigeration Systems Options	M	Two Stage Cooling/Single Circuit	UUT-01, UUT-02A,B
		N	Two Stage Cooling/Single Circuit with Humid-MiZer System	UUT-03A,B
E	Cooling Tons	04	3 Tons	Extrapolated
		05	4 Tons	UUT-01
		06	5 Tons	UUT-03A,B
		07	6 Tons	Interpolated
		08	7.5 Tons	Interpolated
		09	8.5 Tons	Interpolated
		12	10 Tons	Interpolated
		17	15 Tons	Interpolated
		24	20 Tons	Interpolated
		28	25 Tons	UUT-02A,B
F	Sensor Options	A	None	Extrapolated
		C	Supply Air Smoke Detector	Extrapolated
		J	Condensate Overflow Switch	Extrapolated
		M	Condensate Overflow Switch + SA Smoke Detector	UUT-01, UUT-02A,B, UUT-03A,B
G	Fan Options	2	Standard/Medium Static - Eco BlueTM Vane Axial Fan	Extrapolated
		3	High Static - EcoBlue Vane Axial Fan	Extrapolated
		5	Standard/Medium Static - Eco BlueTM Vane Axial Fan and Filter Status Switch	Extrapolated
		6	High Static - EcoBlue Vane Axial Fan and Filter Status Switch	UUT-01, UUT-02A,B, UUT-03A,B
		J	High Static Motor - Horizontal Supply	Extrapolated
		L	High Static Motor - Horizontal Supply and Filter Status Switch	Extrapolated
H	Coil Options (Outdoor - Indoor - Hail Guard)	A	Al/Cu - Al/Cu	Extrapolated
		B	Precoat Al/Cu - Al/Cu	Extrapolated
		C	E-coat Al/Cu – Al/Cu	Extrapolated
		D	E-coat Al/Cu – E-coat Al/Cu	Extrapolated
		M	Al/Cu – Al/Cu — Louvered Hail Guard	UUT-01, UUT-02A,B, UUT-03A,B
		N	Precoat Al/Cu – Al/Cu — Louvered Hail Guard	Extrapolated
		P	E-coat Al/Cu – Al/Cu — Louvered Hail Guard	Extrapolated
		Q	E-coat Al/Cu – E-coat Al/Cu — Louvered Hail Guard	Extrapolated

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OSP-0923
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DATE: 11/16/2026
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Figure 1: Model Nomenclature Guide, Continued

Sample Model Number: ABCDEFGHI-JKLMN				
Character	**Category**	**Allowable Value**	**Description**	**UUT**
I	Voltage	3	208/230-1-60	Extrapolated
		5	208/230-3-60	UUT-01, UUT-02A,B, UUT-03A,B
		6	460-3-60	Extrapolated
J	Base Unit Controls	0	Standard Electromechanical Contols	UUT-03A,B
		3	SystemVu Controller	UUT-01, UUT-02A,B
		8	EconomizerONE	Extrapolated
K	Intake / Exhaust Options	A	None	UUT-01, UUT-02A,B, UUT-03A,B
L	Service Options	0	None	Extrapolated
		3	Hinged Panels (HP)	Extrapolated
		6	MERV 13 Filters	Extrapolated
		9	HP + MERV 13 Filters	Extrapolated
		C	Foil Faced Insulation (FF)	UUT-03A,B
		F	FF + HP	Interpolated
		J	FF + MERV 13 Filters	Interpolated
		M	FF + HP + MERV13 Filters	UUT-01, UUT-02A,B
M	Electrical Options	A	None	Extrapolated
		D	Thru the Base Connections (TTB)	Extrapolated
		E	HACR + TTB	Extrapolated
		F	NFDC + TTB	Extrapolated
		N	Phase Monitor Protection (PMR)	Extrapolated
		P	PMR +HACR	UUT-03A,B
		Q	PMR + NFDC	Extrapolated
		R	PMR + TTB	Extrapolated
		S	PMR + HACR + TTB	Extrapolated
		T	PMR + NFDC + TTB	Extrapolated
		1	High Short Circuit Current Rating (HSCCR)	UUT-01, UUT-02A,B
		2	HSCCR + TTB	Extrapolated
N	Packaging	0	Standard	UUT-01, UUT-02A,B, UUT-03A,B

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CALIFORNIA BUILDING STANDARDS CODE 2025

Table 2: Certified Subcomponents - CanFab Curb with Sound Package

Curb Model Number	Manufacturer	Material	BRD Sound Panel	Curb Height [in.]	Max Curb Weight [lb.]	UUT
DB5000-013	CanFab	Galv carbon steel	DS38-08	24	180	Extrapolated
DB5000-015	CanFab	Galv carbon steel	DS38-08	24	284	Extrapolated
DB5000-018	CanFab	Galv carbon steel	DS38-08	24	317	UUT-01, UUT-03A,B
DB5200-013	CanFab	Galv carbon steel	DS38-08	25	355	Interpolated
DB5200-015	CanFab	Galv carbon steel	DS38-08	25	406	Interpolated
DB5200-018	CanFab	Galv carbon steel	DS38-08	25	516	Interpolated
DB5000-022	CanFab	Galv carbon steel	DS38-08	24	576	Interpolated
DB5000-027	CanFab	Galv carbon steel	DS38-08	24	635	Interpolated
DB5200-022	CanFab	Galv carbon steel	DS38-08	25	811	Interpolated
DB5000-033	CanFab	Galv carbon steel	DS38-08	24	882	Interpolated
DB5200-027	CanFab	Galv carbon steel	DS38-08	25	937	Interpolated
DB5000-035	CanFab	Galv carbon steel	DS38-08	24	950	Interpolated
DB5200-033	CanFab	Galv carbon steel	DS38-08	25	1202	Interpolated
DB5000-039	CanFab	Galv carbon steel	DS57-020	24	1398	Interpolated
DB5200-035	CanFab	Galv carbon steel	DS38-08	25	1458	Interpolated
DB5200-039	CanFab	Galv carbon steel	DS57-020	25	1589	UUT-02A,B

Note: DB5000 indicates a non-isolated curb; DB5200 indicates an isolated curb.

Table 3: Certified Subcomponents - Power Exhaust

Model Number[1]	Manufacturer	Material	Mounting	Max Weight [lb.]	UUT
1118-PE	CanFab	Carbon Steel	Long Side Mounted	163	Extrapolated
1118-MPE	CanFab	Carbon Steel		165	Extrapolated
1120-PE	CanFab	Carbon Steel		165	Extrapolated
1120-MPE	CanFab	Carbon Steel		167	UUT-01, UUT-03A
1122-PE	CanFab	Carbon Steel		290	Interpolated
1122-MPE	CanFab	Carbon Steel		291	Interpolated
1124-PE	CanFab	Carbon Steel		294	Interpolated
1124-MPE	CanFab	Carbon Steel		300	UUT-04[2]
1178-PE	CanFab	Carbon Steel		330	Extrapolated
1178-MPE	CanFab	Carbon Steel		330	Extrapolated
1180-PE	CanFab	Carbon Steel	Short Side Mounted	850	Interpolated
1180-MPE	CanFab	Carbon Steel		853	Interpolated
1182-PE	CanFab	Carbon Steel		860	Interpolated
1182-MPE	CanFab	Carbon Steel		863	UUT-02A

Notes:

1. PE is a depopulated version of MPE
2. UUT-04 serves as the upperbookend for the long side mounted power exhaust configuration

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Table 4: Certified Subcomponents - Economizer

Model Number	Manufacturer	Material	Orientation	Mounting	Max Weight [lb.]	UUT
1105-ECV	CanFab	Carbon Steel	Vertical	Long Side Mounted	91	UUT-03B
1105-ECV	CanFab	Carbon Steel	Horizontal		91	Interpolated
1107-ECV	CanFab	Carbon Steel	Convertible		95	Interpolated
1177-ECV	CanFab	Carbon Steel	Convertible		120	Interpolated
1179-EC	CanFab	Carbon Steel	Vertical	Short Side Mounted	430	Interpolated
1179-HEC	CanFab	Carbon Steel	Horizontal		445	UUT-02B

Note: Convertible option indicates enconomizer can be oriented in Vertical or Horizontal configuration

Table 6: Certified Subcomponents - Compressors

Model Number	Manufacturer	Material	Weight [lb.]	UUT
YAS30K1E	Copeland	Carbon Steel	52	Interpolated
YAS40K1E	Copeland	Carbon Steel	76	Interpolated
YAS49K1E	Copeland	Carbon Steel	76	UUT-03A,B
YA36K1E	Copeland	Carbon Steel	77	Interpolated
YA24K1E	Copeland	Carbon Steel	51	Interpolated
YA49K1E	Copeland	Carbon Steel	77	Interpolated
YA29K1E	Copeland	Carbon Steel	51	UUT-01
YA54K1E	Copeland	Carbon Steel	72	Interpolated
YA61K1E	Copeland	Carbon Steel	77	Interpolated
YA42K1E	Copeland	Carbon Steel	77	Interpolated
YA76K1E	Copeland	Carbon Steel	91	Interpolated
YA104K1E	Copeland	Carbon Steel	114	Interpolated
YA122K1E	Copeland	Carbon Steel	114	Interpolated
YA91K1E	Copeland	Carbon Steel	91	Interpolated
YA154K1E	Copeland	Carbon Steel	148	UUT-02A,B
YA137K1E	Copeland	Carbon Steel	145	UUT-02A,B

Table 7: Certified Subcomponents - Outdoor Fans

Model Number	Manufacturer	Material	Weight [lb.]	UUT
48TC003644	A&P	Polypropylene	2	UUT-03A,B
LA01RA044 (2)	Revcor	Galvanized Steel	2	UUT-01
LA01ZW001 (1)	Revcor	Galvanized Steel	4	Interpolated
LA01RA044 (3)	Revcor	Galvanized Steel	3	Interpolated
LA01RA044 (4)	Revcor	Galvanized Steel	4	Interpolated
LA01RA044 (6)	Revcor	Galvanized Steel	6	UUT-02A,B

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Table 8: Certified Subcomponents - Outdoor Fan Motors

Model Number	Voltage	Manufacturer	Material	Weight [lb.]	UUT
HC42GQ235	230/460	Broad Ocean Motor	Carbon Steel, Copper	12	UUT-03A,B
HC40GE230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	12	Interpolated
HC39GE208 (2)	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	24	UUT-01
HC45AR231 (1)	230	Broad Ocean Motor	Carbon Steel, Copper	30	Interpolated
HC39GE208 (3)	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	35	Interpolated
HC39GE208 (4)	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	47	Interpolated
HC39GE208 (6)	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	71	UUT-02A,B

Table 9: Certified Subcomponents - Blower Motor

Model Number	Voltage	Manufacturer	Material	Weight [lb.]	UUT
HC52JZ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	12	Extrapolated
HD56JZ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	16	Extrapolated
HD58JZ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	16	UUT-03A,B
HD58JQ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	54	Interpolated
HD58JQ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	54	UUT-01
HD58JQ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	54	Interpolated
HD60JQ230	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	54	Interpolated
HD60JQ230 (2)	230/460/575	Broad Ocean Motor	Carbon Steel, Copper	107	UUT-02A,B

Table 10: Certified Subcomponents - Indoor Fans

Model Number	Manufacturer	Material	Weight [lb.]	UUT
48TC001692	PlastiExport	PA62	3	Extrapolated
48TC001693	PlastiExport	PA65	3	UUT-03A,B
48TM005559	PlastiExport	BASF ULTRAMID 66 H2 G35 V0KB1 B	7	UUT-01
48TM005560	PlastiExport	BASF ULTRAMID 66 H2 G35 V0KB1 B	8	Interpolated
48TM005559 (2)	PlastiExport	BASF ULTRAMID 66 H2 G35 V0KB1 B	13	Interpolated
48TM005560 (2)	PlastiExport	BASF ULTRAMID 66 H2 G35 V0KB1 B	15	UUT-02A,B

Table 11: Certified Subcomponents - Filters

Model Number	Manufacturer	Material	Weight [lb.]	UUT
KH01AA369 (4)	AAF	Cardboard, Fiberglass	1	UUT-03A,B
KH01AA368 (4)	AAF	Cardboard, Fiberglass	1	UUT-01
KH01AA365 (6)	AAF	Cardboard, Fiberglass	2	Interpolated
KH01AA075 (6)	AAF	Cardboard, Fiberglass	2	Interpolated
KH01AA075 (9)	AAF	Cardboard, Fiberglass	2	UUT-02A,B

DATE: 11/16/2026

Table 12: Certified Subcomponents - Controller Subassembly

Model Number	Manufacturer	Material	Weight [lb.]	UUT
CCB	Carrier Corporation	Carbon steel enclosure w/ controller	39	UUT-01, UUT-03A,B
CCC	Carrier Corporation	Carbon steel enclosure w/ controller	48	Interpolated
CCD	Carrier Corporation	Carbon steel enclosure w/ controller	81	UUT-02A,B

Table 13: Certified Subcomponents - Condenser Coils

Model Number	Manufacturer	Number of Rows	Material	Weight [lb.]	UUT
48TC006602	Carrier Corporation	2	Copper Tube/Aluminum Fin	64	Extrapolated
48TC004067	Carrier Corporation	2	Copper Tube/Aluminum Fin	80	Extrapolated
48TC001988	Carrier Corporation	2	Copper Tube/Aluminum Fin	74	Extrapolated
48TM009480	Carrier Corporation	2	Copper Tube/Aluminum Fin	97	Extrapolated
48TM009483	Carrier Corporation	2	Copper Tube/Aluminum Fin	97	UUT-01
48TM009486	Carrier Corporation	3	Copper Tube/Aluminum Fin	142	Interpolated
50TM003449	Carrier Corporation	2	Copper Tube/Aluminum Fin	136	Interpolated
50TM002808	Carrier Corporation	2	Copper Tube/Aluminum Fin	172	Interpolated
50HE004601	Carrier Corporation	2	Copper Tube/Aluminum Fin	154	Interpolated
50HE007721	Carrier Corporation	2	Copper Tube/Aluminum Fin	185	Interpolated
50HE004605	Carrier Corporation	2	Copper Tube/Aluminum Fin	226	Interpolated
50HE007357	Carrier Corporation	2	Copper Tube/Aluminum Fin	267	Interpolated
50HE007717	Carrier Corporation	2	Copper Tube/Aluminum Fin	267	UUT-02A,B

Note: All condenser coils are 18 fins per inch.

Table 14: Certified Subcomponents - Evaporator Coils

Model Number	Manufacturer	Number of Rows	Material	Weight [lb.]	UUT
48TC001988	Carrier Corporation	3	Copper Tube/Aluminum Fin	48	Extrapolated
48TC007428	Carrier Corporation	3	Copper Tube/Aluminum Fin	38	Extrapolated
48TC001674	Carrier Corporation	4	Copper Tube/Aluminum Fin	48	Extrapolated
48TC007418	Carrier Corporation	4	Copper Tube/Aluminum Fin	62	Extrapolated
48TC006987	Carrier Corporation	4	Copper Tube/Aluminum Fin	62	Extrapolated
48TM009423	Carrier Corporation	3	Copper Tube/Aluminum Fin	57	Extrapolated
48TM009443	Carrier Corporation	3	Copper Tube/Aluminum Fin	69	Extrapolated
48TM009445	Carrier Corporation	4	Copper Tube/Aluminum Fin	90	UUT-01
48TM009447	Carrier Corporation	4	Copper Tube/Aluminum Fin	90	Interpolated
48TM009429	Carrier Corporation	4	Copper Tube/Aluminum Fin	138	Interpolated
50TM003430	Carrier Corporation	3	Copper Tube/Aluminum Fin	105	Interpolated
50HE006095	Carrier Corporation	4	Copper Tube/Aluminum Fin	178	Interpolated
50HE006561	Carrier Corporation	4	Copper Tube/Aluminum Fin	208	Interpolated
50HE006600	Carrier Corporation	4	Copper Tube/Aluminum Fin	208	UUT-02A,B

Note: All evaporator coils are 15 fins per inch.

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Table 15: Certified Subcomponents - Heat Exchanger Tubes

Model Number	Manufacturer	Number of Tubes	Material	Weight [lb.]	UUT
48TC002423	Carrier Corporation	3	Stainless Steel	51	Extrapolated
48TC002404	Carrier Corporation	5	Stainless Steel	57	Extrapolated
48TC002414	Carrier Corporation	6	Stainless Steel	63	UUT-03A,B
48TM006014	Carrier Corporation	7	Stainless Steel	70	Interpolated
48TM005635	Carrier Corporation	9	Stainless Steel	86	UUT-01
50HE400015	Carrier Corporation	5	Stainless Steel	90	Interpolated
50TM001813	Carrier Corporation	8	Stainless Steel	104	Interpolated
50HE400013	Carrier Corporation	7	Stainless Steel	108	Interpolated
50TM001816	Carrier Corporation	10	Stainless Steel	117	Interpolated
50HE400011	Carrier Corporation	9	Stainless Steel	127	UUT-02A,B

Note: All heat exchangers are 2-stage.

Table 16: Certified Subcomponents - Electric Heaters

Model Number	Manufacturer	Voltage	Material	Weight [lb.]	UUT
48TC002017	Backer	230	Carbon Steel, Nichrome wire	10	Extrapolated
48TC002018	Backer	230	Carbon Steel, Nichrome wire	12	Extrapolated
48TC002021	Backer	230	Carbon Steel, Nichrome wire	15	Extrapolated
48TM005680	Backer	230	Carbon Steel, Nichrome wire	18	Extrapolated
48TM005681	Backer	230	Carbon Steel, Nichrome wire	26	UUT-01
48TM005690	Backer	230	Carbon Steel, Nichrome wire	26	Interpolated
50TM002085	Backer	230	Carbon Steel, Nichrome wire	31	Interpolated
50HE004115	Backer	230	Carbon Steel, Nichrome wire	70	Interpolated
50HE004116	Backer	230	Carbon Steel, Nichrome wire	77	Interpolated
50HE004117	Backer	230	Carbon Steel, Nichrome wire	85	UUT-02A,B

Table 17: Certified Subcomponents - Gas Manifolds

Model Number	Manufacturer	Number of Burners	Material	Weight [lb.]	UUT
48TM000129	Carrier Corporation	2	Stainless Steel	6	Extrapolated
48TM400763	Carrier Corporation	3	Stainless Steel	7	Extrapolated
48TC004048	Carrier Corporation	3	Stainless Steel	9	UUT-03A,B
48TM006331	Carrier Corporation	3	Stainless Steel	7	Interpolated
48TM401021	Carrier Corporation	4	Stainless Steel	8	Interpolated
48TM401023	Carrier Corporation	5	Stainless Steel	10	UUT-01
50TM001956	Carrier Corporation	5	Stainless Steel	11	Interpolated
50TM001817	Carrier Corporation	6	Stainless Steel	12	Interpolated
50TM001959	Carrier Corporation	8	Stainless Steel	13	Interpolated
50HE400028	Carrier Corporation	5	Stainless Steel	12	Interpolated
50HE400027	Carrier Corporation	7	Stainless Steel	13	Interpolated
50HE400026	Carrier Corporation	9	Stainless Steel	15	UUT-02A,B

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UNIT UNDER TEST (UUT)
Summary Sheet

UUT-1

Test Report (TR): 14106-2601; Test Lab: DCL; Reporting: DCL; Test Dates: 7/20/26-7/24/26

Model Line	Model Number	Manufacturer
48QE	48QESM05M6M5A3AM10	Carrier and CanFab

Product Construction Summary

Carrier Air Handling Unit with CanFab Power Exhaust; Galvanized Carbon Steel Enclosure, Galvanized Carbon Steel Curb

Options / Subcomponent Summary

CanFab Curb : DB5000-018, CanFab, Galv carbon steel; Sound Panel: DS38-08, BRD, Acoustical Composite; Power Exhaust: 1120-MPE , CanFab, Carbon Steel; Compressor: YA29K1E, Copeland, Carbon Steel; Outdoor Fan: LA01RA044 (2), Revcor, Galvanized Steel; Outdoor Fan Motor: HC39GE208 (2), Broad Ocean Motor, Steel, Copper; Blower Motor: HD58JQ230, Broad Ocean Motor, Steel, Copper; Indoor Fan: 48TM005559, PlastiExport, BASF ULTRAMID 66 H2 G35 V0KB1 B ; Filter: KH01AA368 (4), AAF, Cardboard, Fiberglass; Controller Subassembly: CCB, Carrier Corporation, Carbon steel enclosure w/ controller; Condensor Coil: 48TM009483, Carrier Corporation, Copper Tube/Aluminum Fin; Evaporator Coil: 48TM009445, Carrier Corporation, Copper Tube/Aluminum Fin; Electric Heater: 48TM005681, Backer, Steel, Nichrome wire; Gas Manifolds: 48TM401023, Carrier Corporation, Stainless Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,280	80.0	74.5	61.5	12.5	6.5	6.8

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

Carrier AC unit was mounted to CanFab (Part Number DB5000-018) non-isolated curb using (6) U-Clip brackets. Each bracket was attached to the curb using (8) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The CanFab power exhaust was long-side mounted using a total of (59) #14 Tek screws and (2) 14 gauge CanFab stiffeners, one on each side. The UUT curb was rigidly attached to the DCL shake table using (12) 3/8" Grade 5 bolts and flat washers.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2A

Test Report (TR): 14106-2601; Test Lab: DCL; Reporting: DCL; Test Dates: 7/20/26-7/24/26

Model Line	Model Number	Manufacturer
48QE	48QESM28M6M5A3AM10	Carrier and CanFab

Product Construction Summary

Carrier Air Handling Unit with CanFab Power Exhaust; Galvanized Carbon Steel Enclosure, Galvanized Carbon Steel Curb

Options / Subcomponent Summary

CanFab Curb: DB5200-039, CanFab, Galv carbon steel; Sound Panel: DS57-020, BRD, Acoustical Composite; Power Exhaust: 1182-MPE, CanFab, Carbon Steel; Compressor: YA154K1E, Copeland, Carbon Steel; Compressor: YA137K1E, Copeland, Carbon Steel; Outdoor Fan: LA01RA044 (6), Revcor, Galvanized Steel; Outdoor Fan Motor: HC39GE208 (6), Broad Ocean Motor, Steel, Copper; Blower Motor: HD60JQ230 (2), Broad Ocean Motor, Steel, Copper; Indoor Fan: 48TM005560 (2), PlastiExport, BASF ULTRAMID 66 H2 G35 V0KB1 B ; Filter: KH01AA075 (9), AAF, Cardboard, Fiberglass; Controller Subassembly: CCD, Carrier Corporation, Carbon steel enclosure w/ controller; Condensor Coil: 50HE007717, Carrier Corporation, Copper Tube/Aluminum Fin; Evaporator Coil: 50HE006600, Carrier Corporation, Copper Tube/Aluminum Fin; Heat Exchanger Tube: 50HE400011, Carrier Corporation, Stainless Steel; Electric Heater: 50HE004117, Backer, Steel, Nichrome wire; Gas Manifolds: 50HE400026, Carrier Corporation, Stainless Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,610	86.3	210.5	81.3	2.3	2.5	5.0

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

Carrier AC unit was mounted to CanFab (Part Number: DB5200-039) isolated curb using (10) K-Clip brackets. Each bracket was attached to the curb using (4) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The CanFab power exhaust was short-side mounted to the Carrier AC unit using a total of (82) #14 Tek screws and (4) 14 gauge CanFab stiffeners, one on each side and two at the top. The CanFab power exhaust was attached to the curb extension using (10) angle brackets, each bracket was attached using (6) #14 Tek screws. The UUT isolated curb was rigidly attached to the DCL shake table using (26) ½'' Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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UNIT UNDER TEST (UUT)
Summary Sheet

UUT-2B

Test Report (TR): 14106-2601; Test Lab: DCL; Reporting: DCL; Test Dates: 7/20/26-7/24/26

Model Line	Model Number	Manufacturer
48QE	48QESM28M6M5A3AM10	Carrier and CanFab

Product Construction Summary

Carrier Air Handling Unit with CanFab Economizer; Galvanized Carbon Steel Enclosure, Galvanized Carbon Steel Curb

Options / Subcomponent Summary

CanFab Curb: DB5200-039, CanFab, Galv carbon steel; Sound Panel: DS57-020, BRD, Acoustical Composite; Economizer: 1105-ECV, CanFab, Carbon Steel; Compressor: YA154K1E, Copeland, Carbon Steel; Compressor: YA137K1E, Copeland, Carbon Steel; Outdoor Fan: LA01RA044 (6), Revcor, Galvanized Steel; Outdoor Fan Motor: HC39GE208 (6), Broad Ocean Motor, Steel, Copper; Blower Motor: HD60JQ230 (2), Broad Ocean Motor, Steel, Copper; Indoor Fan: 48TM005560 (2), PlastiExport, BASF ULTRAMID 66 H2 G35 V0KB1 B ; Filter: KH01AA075 (9), AAF, Cardboard, Fiberglass; Controller Subassembly: CCD, Carrier Corporation, Carbon steel enclosure w/ controller; Condensor Coil: 50HE007717, Carrier Corporation, Copper Tube/Aluminum Fin; Evaporator Coil: 50HE006600, Carrier Corporation, Copper Tube/Aluminum Fin; Heat Exchanger Tube: 50HE400011, Carrier Corporation, Stainless Steel; Electric Heater: 50HE004117, Backer, Steel, Nichrome wire; Gas Manifolds: 50HE400026, Carrier Corporation, Stainless Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,170	86.3	210.5	81.3	2.0	2.3	5.3

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

Carrier AC unit was mounted to CanFab (Part Number: DB5200-039) isolated curb using (10) K-Clip brackets. Each bracket was attached to the curb using (4) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The CanFab economizer was short-side mounted to the Carrier AC unit using (75) #14 Tek screws in total and (4) 14 gauge CanFab stiffeners, one on each side and two at the top. The UUT isolated curb was rigidly attached to the DCL shake table using (26) ½'' Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3A

Test Report (TR): 14106-2601; Test Lab: DCL; Reporting: DCL; Test Dates: 7/20/26-7/24/26

Model Line	Model Number	Manufacturer
48GE	48GEGN06M6M5A0APC0	Carrier and CanFab

Product Construction Summary

Carrier Air Handling Unit with CanFab Power Exhaust; Galvanized Carbon Steel Enclosure, Galvanized Carbon Steel Curb

Options / Subcomponent Summary

CanFab Curb : DB5000-018, CanFab, Galv carbon steel; Sound Panel: DS38-08, BRD, Acoustical Composite; Power Exhaust: 1120-MPE , CanFab, Carbon Steel; Compressor: YAS49K1E, Copeland, Carbon Steel; Outdoor Fan: 48TC003644, A&P, Polypropylene; Outdoor Fan Motor: HC42GQ235, Broad Ocean Motor, Steel, Copper; Blower Motor: HD58JZ230, Broad Ocean Motor, Steel, Copper; Indoor Fan: 48TC001693, PlastiExport, PA65; Filter: KH01AA369 (4), AAF, Cardboard, Fiberglass; Controller Subassembly: CCB, Carrier Corporation, Carbon steel enclosure w/ controller; Heat Exchanger Tube: 48TC002414, Carrier Corporation, Stainless Steel; Gas Manifolds: 48TC004048, Carrier Corporation, Stainless Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,318	80.0	73.8	61.5	11.0	6.3	6.3

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

Carrier AC unit was mounted to CanFab (Part Number DB5000-018) non-isolated curb using (6) U-Clip brackets. Each bracket was attached to the curb using (8) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The CanFab power exhaust was long-side mounted using a total of (59) #14 Tek screws and and (2) 14 gauge CanFab stiffeners, one on each side. The UUT curb was rigidly attached to the DCL shake table using (12) 3/8" Grade 5 bolts and flat washers.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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UNIT UNDER TEST (UUT)
Summary Sheet

UUT-3B

Test Report (TR): 14106-2601; Test Lab: DCL; Reporting: DCL; Test Dates: 7/20/26-7/24/26

Model Line	Model Number	Manufacturer
48GE	48GEGN06M6M5A0APC0	Carrier and CanFab

Product Construction Summary

Carrier Air Handling Unit with CanFab Economizer; Galvanized Carbon Steel Enclosure, Galvanized Carbon Steel Curb

Options / Subcomponent Summary

CanFab Curb : DB5000-018, CanFab, Galv carbon steel; Sound Panel: DS38-08, BRD, Acoustical Composite; Economizer: 1105-ECV, CanFab, Carbon Steel; Compressor: YAS49K1E, Copeland, Carbon Steel; Outdoor Fan: 48TC003644, A&P, Polypropylene; Outdoor Fan Motor: HC42GQ235, Broad Ocean Motor, Steel, Copper; Blower Motor: HD58JZ230, Broad Ocean Motor, Steel, Copper; Indoor Fan: 48TC001693, PlastiExport, PA65; Filter: KH01AA369 (4), AAF, Cardboard, Fiberglass; Controller Subassembly: CCB, Carrier Corporation, Carbon steel enclosure w/ controller; Heat Exchanger Tube: 48TC002414, Carrier Corporation, Stainless Steel; Gas Manifolds: 48TC004048, Carrier Corporation, Stainless Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,150	62.3	73.8	61.5	11.0	7.0	14.0

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

Carrier AC unit was mounted to CanFab (Part Number DB5000-018) non-isolated curb using (6) U-Clip brackets. Each bracket was attached to the curb using (8) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The CanFab economizer was long-side mounted using a total of (15) #14 Tek screws and (2) 14 gauge CanFab stiffeners, one on each side. The UUT curb was rigidly attached to the DCL shake table using (12) 3/8" Grade 5 bolts and flat washers.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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UNIT UNDER TEST (UUT) Summary Sheet

UUT-4

Test Report (TR): 17616-2301; TR UUT#: UUT-3; Test Lab: DCL; Reporting: DCL; Test Dates: 8/21/2023

Model Line	Model Number	Manufacturer
Power Exhaust	1124-MPE40E-1A	Cannon Fabrication

Product Construction Summary

Carrier Air Handling Unit with CanFab Power Exhaust; Carbon Steel Enclosure

Options / Subcomponent Summary

Power Exhaust: 1124-MPE , CanFab, Carbon Steel

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
300	35.0	40.5	41.5	2.5	2.5	4.5

UUT Properties including AC unit and Curb

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,750	87.3	92.4	73.0	2.5	2.5	4.5

Building Code	Test Criteria	UUT Highest Passed Seismic Run Information								
		S_{DS}	z/h	H_f	R_μ	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.40	-	-
		2.00	0.0	1.0	1.0	1.5	-	-	1.34	0.54

Test Mounting Details

The Carrier AC unit openning was reinforced with (2) 44-1/4" long 0.12" thick cold formed angle strips on each side of the AC unit. Each angle strip was attached to the flange of the A/C unit with (2) #14 Tek screws. The left-hand angle strip had an additional #12 Tek screw at the top attachment. The Power Exhaust was connected to the reinforced A/C unit with (2) 2"x 2"x 0.12" carbon steel plates using (2) ¼" bolts per plate and (5) #12 Tek screws per side. The AC unit was mounted to CanFab (Part Number: DB5200) isolated curb using (3) K-Clip brackets on each side. Each bracket was attached to the curb using (4) #14 Tek screws, and to the AC unit using (4) #14 Tek screws. The UUT isolated curb was rigidly attached to the DCL shake table using (14) ½'' Grade 5 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.

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