



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0452

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Siemens Industry, Inc.

Manufacturer's Technical Representative: Heath Klein

Mailing Address: 1000 Deerfield Parkway, Buffalo Grove, IL 60089

Telephone: (847) 970-1165

Email: Heath.klein@siemens.com

Product Information

Product Name: Zone Control Unit (ZCU)

Product Model Number(s): See Attachment

Product Category: Air Conditioning Units

Product Sub-Category: Air Conditioning Units - Inline Fan and Terminal

General Description: Zone Control Units are plug and play pre-fabricated terminal units, each containing an all-inclusive thermal transfer unit, piping, valves, sound attenuators, controls and sensors. Enclosures are galvanized carbon steel.

Mounting Description: Suspended Rigid -

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: DCL

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 894316091

Telephone: (775) 358-5085

Email: kelly.laplace@thevmcgroup.com

Title: Vice President of Sales: Test and Measurement Division



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

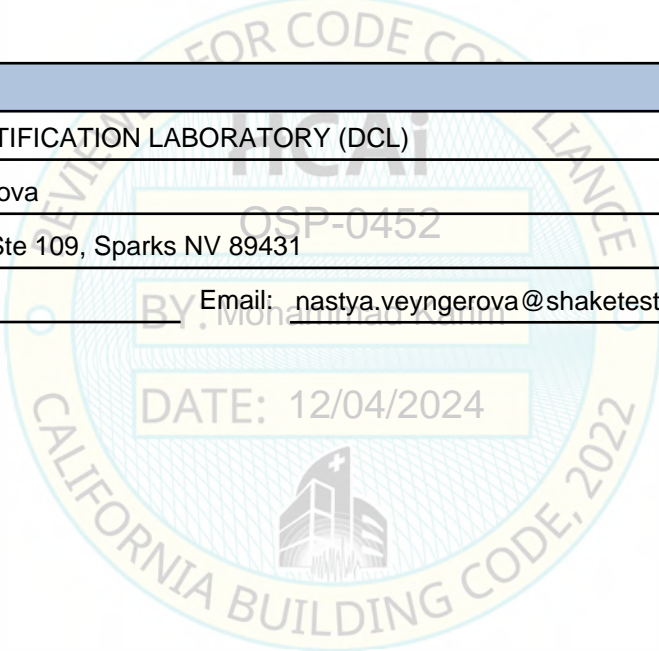
Company Name: THE VMC GROUP
Name: Kenneth Tarlow California License Number: S2851
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

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: Nastya Veyngerova
Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431
Telephone: (775) 358-5085 Email: nastya.veyngerova@shaketest.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.88

SDS (Design spectral response acceleration at short period, g) = 2.50

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

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

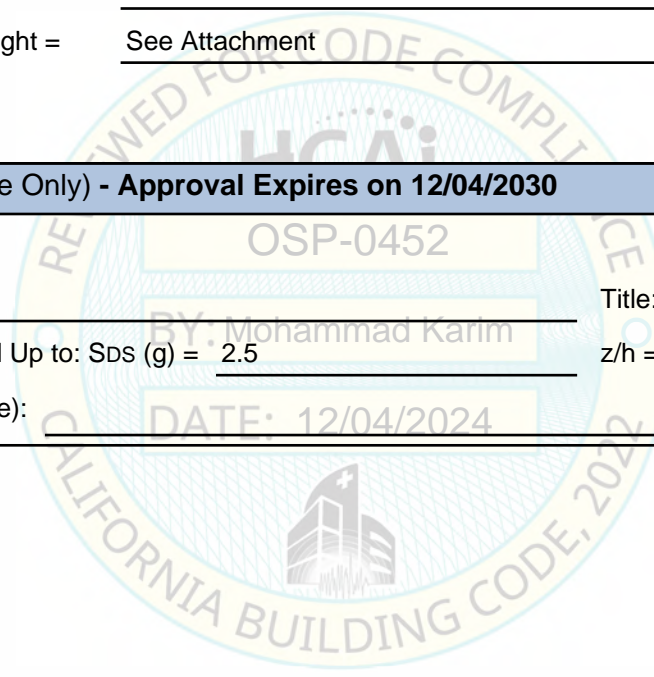
HCAI Approval (For Office Use Only) - Approval Expires on 12/04/2030

Date: 12/4/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.5 z/h = 1

Condition of Approval (if applicable): DATE: 12/04/2024



Special Seismic Certification
Table 1 - Certified Components



DCL Project Number: 14875-2401

Manufacturer: SIEMENS Industry, Inc.

Product Line: ZCU (Zone Control Unit)

Product Construction: 22 gage galvanized carbon steel cabinet with 1.0" closed cell insulation

Options: Factory-installed piping, sound attenuator, coils, controls, airflow sensor, temperature sensor

Mounting: Ceiling suspended

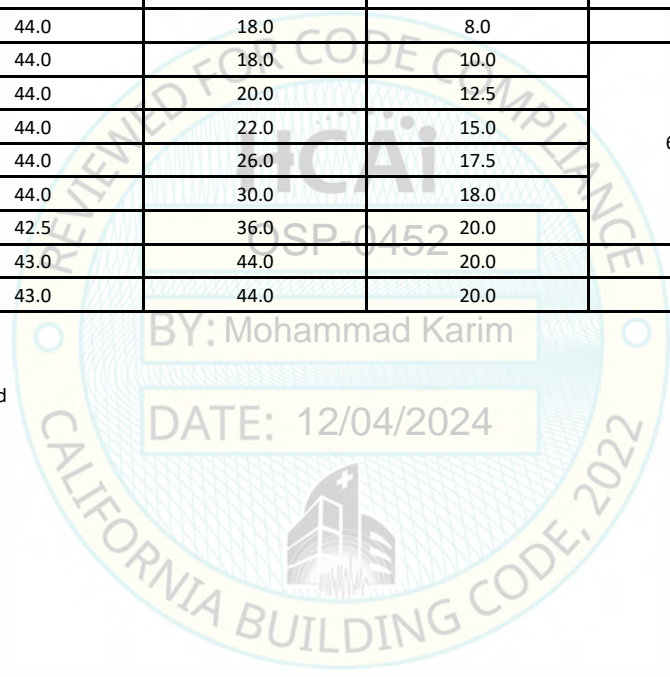
Certified Seismic Levels: Sds(g)=2.5, at z/h=1.0 and z/h=0

Model Number	Dimensions [in.]			Max. Operating Weight [lb.]	Unit	
	Depth	Width	Height			
ZH30450x	49.0	18.0	8.0	67	Interpolated	
ZH30550x	49.0	18.0	8.0	67	Interpolated	
ZH30650x	44.0	18.0	8.0	67	Interpolated	
ZH306504	44.0	18.0	8.0	67	UUT1	
ZH30850x	44.0	18.0	10.0	67 - 160	Interpolated	
ZH31050x	44.0	20.0	12.5		Interpolated	
ZH31250x	44.0	22.0	15.0		Interpolated	
ZH31450x	44.0	26.0	17.5		Interpolated	
ZH31650x	44.0	30.0	18.0		Interpolated	
ZH32050x	42.5	36.0	20.0		Interpolated	
ZH32450x	43.0	44.0	20.0		160	Interpolated
ZH324504	43.0	44.0	20.0		160	UUT2

Notes:

x = Number of coils (1-4)

All components are sound attenuated



Special Seismic Certification
Table 2 - Certified Subcomponents



DCL Project Number: 14875-2401

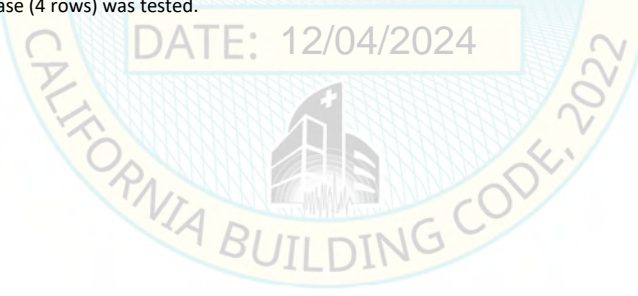
Mounting: Ceiling suspended

Product Line: ZCU (Zone Control Unit)

Coils*					
Model Number	Description	Manufacturer	Material	Weight [lb.] ¹	Unit
N/A	1-4-row, Size 04 to 05	Siemens	Aluminum fin with copper tubes	45 - 48	Extrapolated
N/A	1-4-row, Size 06			48	UUT1
N/A	1-4-row, Size 08 to 16			45 - 83	Interpolated
N/A	1-4-row, Size 20x16			45 - 83	Interpolated
N/A	1-4-row, Size 24x16			83	UUT2
Controls					
550-405	VAV controller	Siemens	Plastic with carbon steel	1	UUT1, UUT2
4011MWDH	120V Transformer			1	UUT1, UUT2
SSD81U	24VAC Actuator			<1	UUT1, UUT2
Airflow Sensor					
N/A	Size 04 to 05	Siemens	Stainless steel	<1	Extrapolated
N/A	Size 06			<1	UUT1
N/A	Size 08 to 16			<1	Interpolated
N/A	Size 20 x 16			<1	Interpolated
N/A	Size 24 x 16			<1	UUT2
Temperature Sensor					
QAM1035	Commissioning sensor	Siemens	Zinc-plated carbon steel and plastic	<1	UUT1, UUT2

* Coils may be 1 to 4 rows. The worst case (4 rows) was tested.

1. Coil weights listed with water.



Special Seismic Certification
Table 3 - Tested Units



DCL Project Number: 14875-2401

Manufacturer: SIEMENS Industry, Inc.

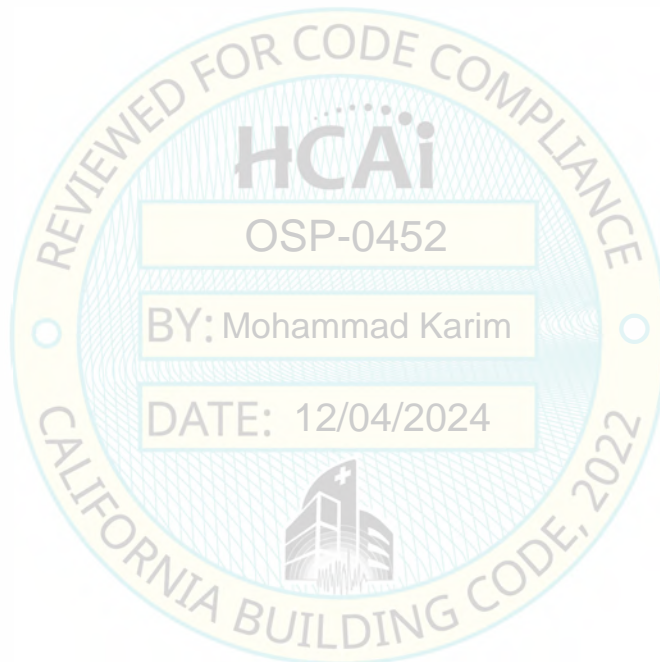
Product Line: ZCU (Zone Control Unit)

Report Number: 10108-1501

Mounting: Ceiling suspended

Certified Seismic Levels: Sds(g)=2.5, at z/h=1.0 and z/h=0

Model Number	Description	Dimensions [in.]			Weight [lb.]	Unit
		Length	Width	Height		
ZH306504	Air condition unit	44.0	18.0	8.0	67	UUT1
ZH324504	Air condition unit	43.0	44.0	20.0	160	UUT2



UNIT UNDER TEST (UUT) Summary Sheet



UUT1

DCL Test Report Number: 10108-1501

Manufacturer: SIEMENS Industry, Inc.

Product Line: ZCU (Zone Control Unit)

Model Number: ZH306504

Mounting: Ceiling Suspended

Product Construction Summary: 22 gage galvanized carbon steel cabinet with 1.0" closed cell insulation

Options / Component Summary:

Coils, controls, airflow sensor, temperature sensor

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

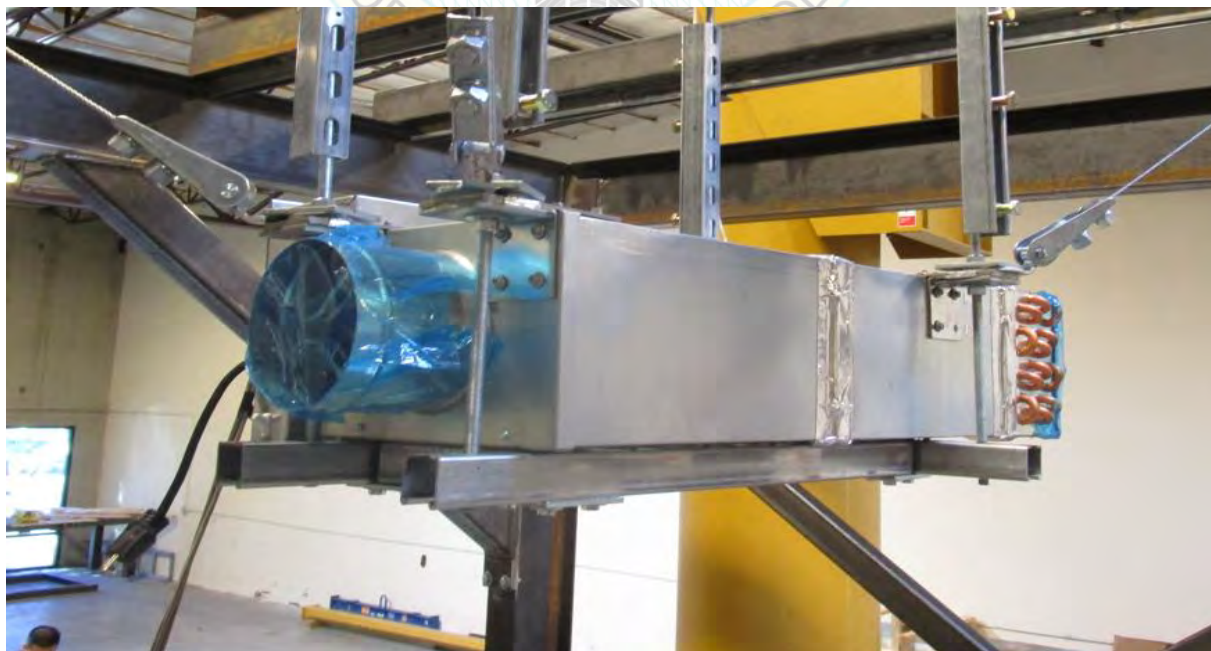
Tested unit	Dimensions (in)				Lowest Natural Frequency (Hz)		
	Operating Weight (lb)	Depth	Width	Height	Front-Back	Side-Side	Vertical
UUT1	67.0	44.0	18.0	8.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

The unit was ceiling suspended from the DCL shake table interface frame using 1/2-inch diameter all-thread rod spaced at 26" in the long direction of the unit, four manufacturer-provided 12-gage 90-degree brackets (each attached to the unit with four #14 SMS), and a strut frame (attached to the bottom of the unit with #12 SMS at 4" on-center). The all-thread rod length was 18" from the top of the unit to the attachment point at the shake table interface frame. Shear brackets were placed on top of each 12-gage, 90-degree bracket; each shear bracket was attached to the unit with four #14 SMS each. Lateral bracing consisted of 3/16-inch diameter steel cable and four sets of Mason SCBH-2/SSB-2 brackets installed at a 45 degree angle. The Mason brackets were attached to the interface frame with 1/2-inch diameter Grade 5 bolts.



Overall view of UUT1

UNIT UNDER TEST (UUT) Summary Sheet



UUT2

DCL Test Report Number: 10108-1501

Manufacturer: SIEMENS Industry, Inc.

Product Line: ZCU (Zone Control Unit)

Model Number: ZH324504

Mounting: Ceiling Suspended

Product Construction Summary: 22 gage galvanized carbon steel cabinet with 1.0" closed cell insulation

Options / Component Summary:

Coils, controls, airflow sensor, temperature sensor

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Tested unit	Dimensions (in)				Lowest Natural Frequency (Hz)		
	Operating Weight (lb)	Depth	Width	Height	Front-Back	Side-Side	Vertical
UUT2	160.0	43.0	44.0	20.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

The unit was ceiling suspended from the DCL shake table interface frame using 1/2-inch diameter all-thread rod spaced at 31" in the long direction of the unit, four manufacturer-provided 12-gage 90-degree brackets (each attached to the unit with four #14 SMS), and a strut frame (attached to the bottom of the unit with #12 SMS at 4" on-center). The all-thread rod length was 17" from the top of the unit to the attachment point at the shake table interface frame. Shear brackets were placed on top of each 12-gage, 90-degree bracket; each shear bracket was attached to the unit with four #14 SMS each. Lateral bracing consisted of 3/16-inch diameter steel cable and four sets of Mason SCBH-2/SSB-2 brackets installed at a 45 degree angle. The Mason brackets were attached to the interface frame with 1/2-inch diameter Grade 5 bolts.



Overall view of UUT2