



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY	
APPLICATION #:	OSP – 0230 – 10

**OSHPD Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Stulz

Manufacturer's Technical Representative: Artie Carbaugh

Mailing Address: 1572 Tilco Drive, Frederick, MD 21704

Telephone: (240) 529-1210 Email: ArtieC@stulz-ats.com

**Product Information**

Product Name: STULZ Compact – CWE Computer Room Air Handlers

Product Type: Computer Room Air Handlers

Product Model Number: CWE CCD 300 - 3600 and CCU 300 – 2800

(List all unique product identification numbers and/or part numbers)

General Description: CCD are downflow units and CCU are upflow units. Refer to Table 1 for additional configurations.

Mounting Description: Rigid base mounted (without neoprene pads) or up to 36 inch nominally tall floor-stand mounted at base over up to 1/2" neoprene pad isolation.

**Applicant Information**

Applicant Company Name: STULZ

Contact Person: Artie Carbaugh

Mailing Address: 1572 Tilco Drive, Frederick, MD 21704

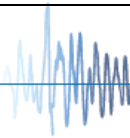
Telephone: (240) 529-1210 Email: ArtieC@stulz-ats.com

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: 08/23/2016

Title: Mech. Designer Company Name: STULZ

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: Scott Hooker, S.E.

Name: Buehler & Buehler Structural Engineers, Inc. California License Number: S3937

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

Telephone: (916) 443-0303 Email: shooker@bbse.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: Clark Testing

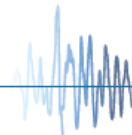
Contact Name: Greg R. Deitt

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

Telephone: (412) 387-1016 Email: gdeitt@clarktesting.com

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY  
OSH-FD-759 (REV 12/16/15)





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**Seismic Parameters**

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

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 0.75 \*  $S_{DS}$  (Rigid Support) or 1.8  $S_{DS}$  (with Neoprene Pad)

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.36 (CCU units) & 2.50 (CCD units)

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

$R_p$  (Equipment or component response modification factor) = 6.0 (Rigid Support) or 2.5 (with Neoprene Pad)

$\Omega_0$  (System overstrength factor) = 2

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Table 1

Overall dimensions and weight (or range thereof) = See Table 1

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) = \_\_\_\_\_

$\Omega_0$  (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): \_\_\_\_\_

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

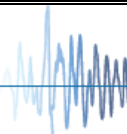
Signature:  Date: 11/16/2016

Print Name: M. R. Karim Title: SHFR

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

Condition of Approval (if applicable): \_\_\_\_\_

\_\_\_\_\_





Special Seismic Certification  
OSHPD Preapproval  
STULZ CWE Productline



**Table 1. Approved Unit List \***

<i>Model Number</i>	<i>Nominal Capacity (ton) **</i>	<i>Width (in)</i>	<i>Length (in)</i>	<i>Height (in)</i>	<i>Operating Weight (lbs)</i>	<i>Tested/ Interpolated</i>
CCD - 300 - CWE	16.0	35.0	45.5	76.25	827	Extrapolated
CCU - 300 - CWE	16.0	35.0	45.5	76.25	927	Extrapolated
<b>CCD - 600 - CWE</b>	<b>27.0</b>	<b>35.5</b>	<b>77.5</b>	<b>76.25</b>	<b>1577</b>	<b>UUT-1</b>
CCU - 600 - CWE	27.0	35.0	77.5	76.25	1527	Interpolated
CCU - 600 - CWE - RR	27.0	40.5	77.5	88.00	1610	Interpolated
CCD - 900 - CWE	33.0	35.5	77.5	76.25	1786	Interpolated
CCU - 900 - CWE	36.0	35.0	77.5	76.25	1786	Interpolated
CCU - 900 - CWE - RR	36.0	40.5	77.5	88.00	1810	Interpolated
CCD - 1200 - CWE	40.0	40.5	95.0	76.25	2009	Interpolated
CCU - 1200 - CWE	33.0	40.5	95.0	88.00	2042	Interpolated
CCU - 1200 - CWE - RR	33.0	40.5	95.0	88.00	2042	Interpolated
CCD - 1500 - CWE	36.0	35.5	118.0	76.25	2116	Interpolated
CCU - 1500 - CWE	34.0	40.5	118.0	88.00	2130	Interpolated
CCU - 1500 - CWE - RR	34.0	40.5	118.0	88.00	2130	Interpolated
CCD - 1800 - CWE	45.0	35.5	118.0	76.25	2116	Interpolated
CCU - 1800 - CWE	42.0	40.5	118.0	88.00	2130	Interpolated
CCU - 1800 - CWE - RR	42.0	40.5	118.0	88.00	2130	Interpolated
CCD - 1900 - CWE	53.0	35.5	118.0	76.25	2207	Interpolated
CCU - 1900 - CWE	50.0	40.5	118.0	88.00	2240	Interpolated
CCU - 1900 - CWE - RR	50.0	40.5	118.0	88.00	2240	Interpolated
CCU - 2300 - CWE	56.0	40.5	118.0	88.00	2882	Interpolated
CCU - 2300 - CWE - RR	56.0	40.5	118.0	88.00	2882	Interpolated
CCD - 2300 - CWE	59.0	40.5	118.0	76.25	2863	Interpolated
CCD - 2300 - CWE - EF	64.0	40.5	118.0	76.25	3058	Interpolated
CCD - 2300 - CWE - EF - UF	60.0	40.5	118.0	76.25	3074	Interpolated
CCD - 2800 - CWE	78.0	50.0	118.0	88.00	3382	Interpolated
<b>CCU - 2800 - CWE</b>	<b>82.0</b>	<b>50.0</b>	<b>118.0</b>	<b>88.00</b>	<b>3482</b>	<b>UUT-2</b>
CCU - 2800 - CWE - RR	82.0	50.0	118.0	88.00	3482	Interpolated
CCD - 2800 - CWE - UF	78.0	50.0	118.0	88.00	3382	Interpolated
<b>CCD - 3600 - CWE</b>	<b>100.0</b>	<b>50.0</b>	<b>127.3</b>	<b>88.00</b>	<b>3762</b>	<b>UUT-3</b>

\* The units are approved with up to 36" tall seismic floor stands.

\* The units are approved with up to 36" nominal tall plenums.

\*\* At 80°F Return Air Temp, 50% R.H, 45° EWT, 10°F DT



Special Seismic Certification  
OSHPD Preapproval  
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**Table 2. Approved Productline Sub-Component List**

<b>Fan / Motor (EC Plug Fan)</b>				
<i>Model Number</i>	<i>Nominal Capacity (Hp)/ Voltage</i>	<i>Manufacturer*</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
560	4.16 Hp/ 380-480V	EBM	Aluminum blade fan- Die-cast Aluminum motor enclosure	UUT-1
630 std	3.88 Hp/ 380-480V	EBM	Aluminum blade fan- Die-cast Aluminum motor enclosure	Interpolated
630 w/large motor	5.3/ 380-480V	EBM	Aluminum blade fan- Die-cast Aluminum motor enclosure	UUT-2 & 3

<b>Coils</b>			
<i>Tube Size</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
1/2"	Basetec	Cu Tube/ AL Fin	UUT-1, 2 & 3
1/2"	Heatcraft	Cu Tube/ AL Fin	UUT-1, 2 & 3

<b>Filters</b>			
<i>Thickness</i>	<i>Description</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
4"	4" 30% or 60% Pleated	AAF	UUT-1
6"	6" 30% or 60% Pleated	AAF	UUT-2 & 3

<b>Humidifier</b>			
<i>type</i>	<i>Capacity</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
Steam	5 LBS	Nortec	Extrapolated
Steam	10 LBS	Nortec	UUT-1
Steam	15 LBS	Nortec	Interpolated
Steam	20 LBS	Nortec	UUT-2
Steam	25 LBS	Nortec	Interpolated
Steam	30 LBS	Nortec	UUT-3

<b>Reheat - Electric</b>			
<i>Capacity (Kw) * /Voltage</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
9 Kw/ 460V	Stainless Steel Fin / Steel Tube	Creative Assemblies	UUT-2
9 Kw/ 460V	Steel Fin / Steel Tube	Firem	UUT-1
9 Kw/ 460V	Tube	Caloritech	UUT-3

\* 3 Reheats installed in each tested unit

<b>Unit Cabinet</b>		
<i>material</i>	<i>Manufacturer</i>	<i>With Test</i>
Steel(All painted parts Galvaneal)	Stulz	UUT 1, 2 & 3

<b>Condensate Pump</b>			
<i>Nominal capacity</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
0.2 Hp	Hartel	Plastic tank / Carbon steel top cover	UUT-1
0.2 Hp	Becket	Plastic tank / Carbon steel top cover	UUT-2 & 3

<b>Floorstand</b>			
<i>Nominal Height (in)</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
12.00 in	Stulz	Carbon Steel	UUT-1
15.00 in	Stulz	Carbon Steel	Interpolated
18.00 in	Stulz	Carbon Steel	Interpolated
24.00 in	Stulz	Carbon Steel	Interpolated
36.00 in	Stulz	Carbon Steel	UUT-3



**Special Seismic Certification**  
**OSHPD Preapproval**  
**STULZ CWE Productline**



**Table 2. Approved Productline Sub-Component List (Cont'd)**

<b>Control Panel</b>			
<i>Subcomponents</i>	<i>Manufacturer</i>	<i>Material/ Part Number</i>	<i>Interpolated / Included With Test</i>
din rail	Weidmuller	Galvanized Steel	UUT-1, 2 & 3
ground lug	Burndy	KA25U	UUT-1, 2 & 3
panel, insert	Stulz	Galvanized Steel	UUT-1, 2 & 3
distribution block	Phoenix Contact	Steel/Plastic	UUT-1, 2 & 3
distribution block	Erico	Steel/Plastic	UUT-1, 2 & 3
ground bar	NSi	steel	UUT-1, 2 & 3
relay	Phoenix Contact	copper/plastic	UUT-1, 2 & 3
Control Cable	Olflex	copper/plastic	UUT-1, 2 & 3
pressure switch	Honeywell	steel/plastic	UUT-1, 2 & 3
terminal blocks	Wago	copper/plastic	UUT-1, 2 & 3
ESquared	Carel	Steel/Plastic	UUT-1, 2 & 3
controller expansion	Carel	Steel/Plastic	UUT-1, 2 & 3
connectors	Carel	Steel/Plastic	UUT-1, 2 & 3
breaker	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
starter	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
circuit breakers	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
transformer	Acme	T-2-530xx	UUT-1, 2 & 3
multitap	Block	STU xxx / 24	UUT-1, 2 & 3
circuit breakers	Moeller	Steel/Plastic	UUT-1, 2 & 3
600V	ABB	Steel/Plastic	UUT-1, 2 & 3
motor starter	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
contactor	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
fuses, Class J	Cooper Busman	Steel/Plastic	UUT-1, 2 & 3
fuses, SCR	Watlow	Steel/Plastic	UUT-1, 2 & 3
scr module	Watlow	Steel/Plastic	UUT-1, 2 & 3
fuse block, Class J	Cooper Busman	Steel/Plastic	UUT-1, 2 & 3
fuse block, SCR	Watlow	Steel/Plastic	UUT-1, 2 & 3
temp sensors	Carel	Steel/Plastic	UUT-1, 2 & 3
humidity sensor	Stulz	Steel/Plastic	UUT-1, 2 & 3
relay busbar	Phoenix Contact	Steel/Plastic	UUT-1, 2 & 3
busbar feeder block	Allen Bradley	Steel/Plastic	UUT-1, 2 & 3
disconnect handle	ABB	Steel/Plastic	UUT-1, 2 & 3
disconnect shaft	ABB	Steel/Plastic	UUT-1, 2 & 3
disconnect block	ABB	Steel/Plastic	UUT-1, 2 & 3
Relay	Finder	Steel/Plastic	UUT-1, 2 & 3
Timer	Carlos Gavazzi	Steel/Plastic	UUT-1, 2 & 3
Transformer	Jard Magnetics	7541xxx	UUT-1, 2 & 3



**Special Seismic Certification**  
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**STULZ CWE Productline**



Air Technology Systems, Inc.

**Table 3. Tested Unit Subcomponent List**

	Type	Description	Manufacturer	Material	Part #
UUT-1 Size 600	Fan	FAN_EC PLUG 560MM 380-480V_R3G 560AH0205	EBM	Aluminum blade fan- Die-cast Aluminum motor enclosure	132945
	Humidifier	HUMIDIFIER 10LB/H 460/575/1/60	Nortec	Plastic Cylinder	172716
	Plenum	ZZA_PLENUM EXT 24" CCD-600-900-( ) CHARCOAL	Stulz	Carbon Steel	151735
	Reheat	HEATER ELECTRIC REHEAT 1 X 9 KW 460/265V	Firem	Steel Fin / Steel Tube	136192
	Coils	COIL_CW 37.5FH 60FL 4R RI 1.625"CON 6P 20CIR CCD-600-CWE-V	Heatcraft	Copper Tube/Al Fin	159095
		COIL_CW 37.5FH 60FL 4R LE 1.625"CON 6P 20CIR CCD-600-CWE-V	Basetec	Copper Tube/Al Fin	159094
	Filter	FILTER PLEATED 25X32X3 3/4 30%	AAF	fiberglass/cardboard	136797
	pump	PUMP_COND 0.2HP 308/415/460/1/5	Hartel	plastic/steel	149763
	Control Panel	Control Panel	Stulz	Galvanized Steel Box	150811
	Floorstand	Seismic Rated Floor Stand	Stulz	Carbon Steel	AZZ1911
	Add'l interior mounting	Seismic Bracket at the coil	Stulz	Galvanized Carbon Steel	175328
	Add'l interior mounting	Seismic Bracket at the Door	Stulz	Galvanized Carbon Steel	175329
UUT-2 Size 2800	Fan	FAN_EC PLUG 630MM 380-480V 3.95KW_R3G630	EBM	Aluminum blade fan- Die-cast	151784
	Humidifier	HUMIDIFIER, 20 LB, 460/575/3/60	Nortec	Plastic Cylinder	172720
	Plenum	ZZA_PLENUM BOX 36 CCU-2800-CWE	Stulz	carbon steel	174961
	Reheat	ASSY_ELEC REHEAT 9KW ST EL 460/3/60 CCU-2300-CW & RR	Creative Assemblies	Stainless Steel Fin / Steel Tube	155369
	Coils	COIL_CW 45FH 101FL 8R 8P SLAB RH	Basetec	Copper Tube/Al Fin	173988
		COIL_CW 45FH 101FL 8R 8P SLAB LH	Heatcraft	Copper Tube/Al Fin	173989
	Filter	FILT PLEAT 20.5X47.5X4 30% ACTUAL	AAF	fiberglass/cardboard	174844
		FILT_PLEAT 30% 23x47.5 3.75	AAF	fiberglass/cardboard	151546
	Pump	PUMP_CNDSTE 460/1/60 1/5 HP_FLA=0.8	Beckett	plastic/steel	126701
	Control Panel		Stulz	Galvanized Steel Box	150811
	Add'l interior mounting	Seismic Bracket at the coil	Stulz	Galvanized Carbon Steel	175328
	Add'l interior mounting	Seismic Bracket at the Door	Stulz	Galvanized Carbon Steel	175329
Add'l interior mounting	Seismic Support at the Coils Shelf	Stulz	Galvanized Carbon Steel	175330	
UUT-3 Size 3600	Fan	FAN_EC PLUG 630MM 380-480V 3.95KW_R3G630	EBM	Aluminum blade fan- Die-cast Aluminum motor enclosure	151784
	Humidifier	HUMIDIFIER, 30 LB, 460/575/3/60	Nortec	Plastic Cylinder	172723
	Plenum	ZZA_PLENUM EXT 36" FILTER CCD-3600-CWE_CHARCOAL	Stulz	carbon steel	163755
	Reheat	HEATER AIR 3KW 265V_FIN TUBULAR	Caloritech, Inc.	Stainless Steel Fin / Steel Tube	152629
	Coils	COIL_CW 56.25FH 106FL 6ROW 12.7FPI SLAB RH CCD-3600-CWE	Basetec	Copper Tube/Al Fin	163578
		COIL_CW 56.25FH 106FL 6ROW 12.7FPI SLAB LH CCD-3600-CWE	Heatcraft	Copper Tube/Al Fin	163579
	Filter	FILT_PLEAT 30% 25X37 3.75	AAF	fiberglass/cardboard	140830
	Pump	PUMP_CNDSTE 460/1/60 1/5 HP_FLA=0.8	Beckett	plastic/steel	126701
	Control Panel		Stulz	Galvanized Steel Box	163703
	Floorstand	Seismic Rated Floor Stand	Stulz	Carbon Steel	AZZ3610
	Add'l interior mounting	Seismic Bracket at the coil	Stulz	Galvanized Carbon Steel	175328
	Add'l interior mounting	Seismic Bracket at the Door	Stulz	Galvanized Carbon Steel	175329

**UUT-1 Test Summary**

**Testing Lab:** Clark Testing, 1801 Route 51, Jefferson Hills, PA 15025  
**Testing Report:** 9798RevB (October 2011)  
**Test Number:** Run 4 (UUT 1)

Model Number	UUT Mark	Excitation Direction	Frequency* (Hz)	Unit only			Floor Stand	Plenum	Unit Weight (lbs)
				Width (in)	Depth (in)	Height (in)	Height (in)	Height (in)	
CCD-600-CWE	UUT-1	X	7.9	77.50	35.40	76.25	12"	36"	1577
		Y	10.6						
		Z	No Resonance						

UUT Designation		Seismic Parameters							
Identification No.	UUT-1	Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	Horizontal		Vertical	
Serial No.	CCD-600-CWE					A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
Attachment Method	10007500 mounted to a 12" tall floorstand. 4 bolts per leg - 6 legs (Total 24 bolts) with 1/4" thick neoprene pad.	CBC 2016	AC 156	2.50	1.0	4.00	3.00	1.67	0.67



**Notes:** The UUTs were full of contents during the test.  
 After the test, the UUT was functional and the structural integrity force-resisting system and unit connection was maintained.



**UUT-2 Test Summary**

**Testing Lab:** Clark Testing, 1801 Route 51, Jefferson Hills, PA 15025  
**Testing Report:** 9813 (October 2011)  
**Test Number:** Run 1 (UUT 2)

Model Number	UUT Mark	Excitation Direction	Frequency* (Hz)	Unit only			Floor Stand	Plenum	Unit Weight (lbs)
				Width (in)	Depth (in)	Height (in)	Height (in)	Height (in)	
CCU-2800-CWE	UUT-2	X	9.4	118.00	50.00	88.00	NONE	36"	3482
		Y	11.8						
		Z	31.6						

UUT Designation	UUT-2	<b>Seismic Parameters</b>							
Identification No.	CCU-2800-CWE	Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	Horizontal		Vertical	
Serial No.	10008118					A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
Attachment Method	mounted direct to structure with seven (7) angle clips with (2) 1/2" dia bolts (Total 14 bolts to the shake table)	CBC 2016	AC 156	2.36	1.0	3.78	2.83	1.58	0.64



**Notes:** The UUTs were full of contents during the test.  
 After the test, the UUT was functional and the structural integrity force-resisting system and unit connection was maintained.

**UUT-3 Test Summary**

**Testing Lab:** Clark Testing, 1801 Route 51, Jefferson Hills, PA 15025  
**Testing Report:** 9798RevB (October 2011)  
**Test Number:** Run 3 (UUT 3)

Model Number	UUT Mark	Excitation Direction	Frequency* (Hz)	Unit only			Floor Stand	Plenum	Unit Weight (lbs)
				Width (in)	Depth (in)	Height (in)	Height (in)	Height (in)	
CCD-3600-CWE	UUT-3	X	7.4	127.30	50.00	88.00	36"	36"	3762
		Y	6.1						
		Z	9.2						

UUT Designation	UUT-3	<b>Seismic Parameters</b>							
Identification No.	CCD-3600-CWE	Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	Horizontal		Vertical	
Serial No.	10007501					A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
Attachment Method	mounted to a 36" tall floorstand. 4 bolts per leg - 10 legs (Total 40 bolts) with 1/4" thick neoprene pad.	CBC 2016	AC 156	2.50	1.0	4.00	3.00	1.67	0.67



**Notes:** The UUTs were full of contents during the test.  
 After the test, the UUT was functional and the structural integrity force-resisting system and unit connection was maintained.



**Nomenclature**

Model Nomenclature						
Compact CWE - Vertical Floor Systems						
CCD-2300-CWE-EF or CCD-XXXX-XXX-XX						
Model	Air Pattern	Capacity (kW)	Number of Refrigeration Circuits	Cooling Method	E	Additional Special Options
Compact CWE System	D = Downflow U = Upflow	30, 60, 90, 120, 150, 180, 190, 230, 280, 360	0	CW = Chilled Water System	E = EC Fan	EF = External Filter LF = Large Fan UF = Under Floor RR = Rear Return
CC	D	230	0	CW	E	EF

FOR REFERENCE ONLY