APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0824

HCAI Special Seismic Certification Preapproval (OSP)

Type: [X] New [ ] Renewal

Manufacturer Information

Manufacturer: Stanford Health Care and School of Medicine

Manufacturer's Technical Representative: Matt Martin

Mailing Address: 1830 Embarcadero Rd., Palo Alto, CA 94303

Telephone: (408) 915-1572 Email: MattMartin@stanfordhealthcare.org

Product Information

Product Name: See Certified Product list

Product Model Number(s): See Certified Product list

Product Category: Internal Communication Servers and Routers

Product Sub-Category: Wireless Communication Systems

General Description: Servers, Routers, UPS, PDU, and Switches

Mounting Description: Rigid Floor Mounted Rack Supported

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: Universal Structural Engineers, LLC

Contact Person: Kevin OKeefe

Mailing Address: 1660 S. Amphltett Blvd., Suite 335, San Mateo, CA 94402

Telephone: (650) 312-9233 Email: ktokeefe@universalstructuralengineers.com

Title: Structural Engineer

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

Company Name: UNIVERSAL STRUCTURAL ENGINEERS

Name: Kevin O'Keefe California License Number: S4192

Mailing Address: 1660 Amphlett Blvd., Suite 335, San Mateo, CA 94402

Telephone: (650) 312-9233 Email: ktokeefe@universalstructuralengineers.com

Certification Method

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

☐ Other (Please Specify):

Testing Laboratory

Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)

Contact Person: Morgan Foster

Mailing Address: 38995 Cherry Street, Newark CA 94560

Telephone: (510) 578-3500 Email: Morgan.Foster@element.com

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.26

S_{DS} (Design spectral response acceleration at short period, g) = 1.75

a_p (Amplification factor) = 1

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 10/31/2030

Date: 10/31/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 1.75 z/h = 1

Condition of Approval (if applicable):

Universal
Structural
Engineers, LLC

STANFORD OSP ATTACHMENT 1

Table 1a-Certified Product List

OSHPD Special Seismic Certification Summary of Certified Units						
Manufacturer: Varies, See below						
Equipment: IT Equipment (Equipment Configuration per below)						
Mounting Condition Tested: Mounted in RXL, 5570-BK452432 - 4 Post rack bolted at the base						
Manufacturer	Model #	Height (in.)	Width (in.)	Depth (in.)	Equipment Weight (lbs.)	Unit
RXL	RXL-5570-BK842432TNNNN (4-Post Rack)	84	24	32	829[1]	UUT1
Cisco	9800-80 w/ modular uplink card	3.47	17.3	20.5	34.5	UUT1
Infoblox	TE-1405 Trinzic	1.73	17.36	21.54	20	UUT1
Cisco	C9500-24Y4C	1.73	17.5	18	22	UUT1
Eaton	5PX1500RTN	3.4	17.4	20.6	65	UUT1
Eaton	9PX1500RT	3.4	17.3	17.7	42.5	UUT1
Rack Center of Gravity						
1. Center of Gravity for the whole rack including equipment, the rack and the vertical wire manager = 34.6 inches from the bottom of the rack.						

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STANFORD OSP ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

Table 2a-UUT1 Product Summary-4 Post Rack

OSHPD Special Seismic Certification: Unit Under Test Summary-UUT 1

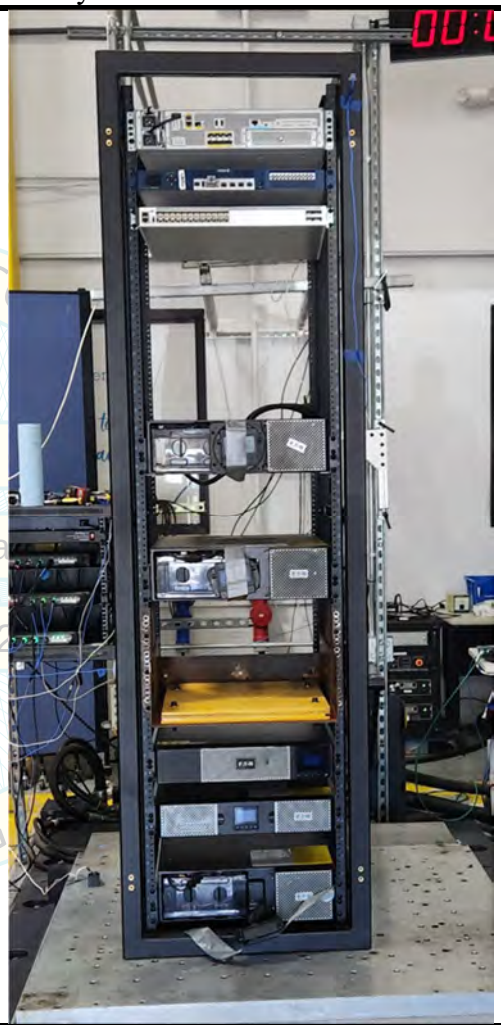
	UUT#	Component
Rack:	1	RXL 4 Post (5570-BK452432TNNNN)
Equipment:		See Table 2a
Unit Function	Networking equipment	

Unit Properties			
Total Weight (lbs)	Dimensions (in)		
	Depth	Width	Height
829	32	24	84

Lowest Natural Frequency (Hz)			
Front-Back	Side-Side	Vertical	45
8.84	5.84	17.07	6.07

Unit Mounting:	Bolted to shake table with four (4) ½" diameter bolts.

Seismic Test Parameters			
Building Code:	2022 California Building Code		
Test Criteria:	ICC-ES AC 156		
Lab Report No.	TR-180446.01-AC156 Rev 0		
Sds (g)	Ip	z/h	
1.75	1.5	1.0	
A_{RIG} (g) (horizontal)	A_{FLX} (g) (horizontal)	A_{RIG} (g) (vertical)	A_{FLX} (g) (vertical)
2.1	2.8	.47	1.17



Construction:	Carbon Steel Rack
Components:	1) CISCO 9800-80 w/ modular uplink card 2) INFOBLOX TE-1405 Trinzic 3) CISCO C9500-24Y4C 4 EATON 5PX1500RT 5) EATON 9PX1500RTN
Center of Gravity	34.6 inches from the bottom of the rack.

Note: The unit was full of contents during testing and remained function before and after the ICC-ES AC156 test. The unit maintained integrity during and after the ICC-ES AC156 Test.

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Table 2a-UUT1 Components and Subcomponents

OSHPD Special Seismic Certification: Unit Under Test Summary: Components and Subcomponent					
#	RXL 5570	Total Equip Weight(lb)	Sub-components	Height (COG) (in)	Component Mounting
45					
44	9800-80 (Rail weight=6.5lb)	41	(CISCO) Modular Uplink Card	77.25	(4) #12 Screws in Back & Front
43					
42					
41	TE-1405 Trinzic	20		72.875	(4) #12 screws in Front
40					
39	C9500-24Y4C	22		69.375	(4) #12 screws in Front
38					
37					
36					
35					
34					
33					
32					
31					
30					
29					
28	DUMMY WEIGHT	114		48.375	(4) #12 Screws in Back & Front for rail (4) #12 screws in front unit to rail
27					
26					
25					
24					
23					
22					
21	DUMMY WEIGHT	110		36.125	(4) #12 Screws in Back & Front for rail (4) #12 screws in front unit to rail
20					
19					
18					
17					
16					
15	DUMMY WEIGHT	108		25.625	(6) #12 Screws in Front
14					
13					
12					
11					
10	5PX1500RT (Rail weight=8lb)	73		17.75	(2) #12 Screws in Back & Front for rail (4) #12 screws in front unit to rail
9					
8					
7	9PX1500RTN (Rail weight=8lb)	51		12.5	(2) #12 Screws in Back & Front for rail (4) #12 screws in front unit to rail
6					
5					
4					
3	DUMMY WEIGHT	110		6.9375	(4) #12 Screws in Back & Front for rail (4) #12 screws in front unit to rail
2					
1					
0					
0	RXL 5570-BK452432TNNNN	180		42	(4) 1/2" Diameter Bolts
	Calculated Weight W/O Cables=	**829**	COG=	34.6	
	Component Weight (W/O Dummy Weight)=	**387**			

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