



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP - 0101 - 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Vertiv Corporation

Manufacturer's Technical Representative: Benjamin Lay

Mailing Address: 975 Pittsburgh Drive, Delaware, OH 43015

Telephone: (740) 833 - 8518

Email: Benjamin.Lay@Vertiv.com

Product Information

Product Name: Liebert GTX4 UPS, Liebert GTX4 External Battery Cabinet, Liebert APS UPS, APS Battery Cabinet, MPH2-PDU, Liebert MicroPod

Product Type: UPS

Product Model Number: Varies, see attachment.

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

General Description: Rack mounted and base mounted UPS, single phase power. Seismic enhancements made to the test units and modifications required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid base mounted and rigid rack mounted. **Rack mounted units may only be installed in the same model rack, as tested, and cannot exceed the maximum wt. or C.G. as shown on the UUT Sheets. See rack reference sheet at end of OSP.**

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Contact Person: Andrew M. Coughlin, SE

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 844-878-0200

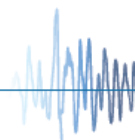
Email: acoughlin@structint.com

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: 08/16/2019

Title: Director, TRU Compliance Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

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





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FACILITIES DEVELOPMENT DIVISION**

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

Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Name: Andrew M. Coughlin California License Number: S6082

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 844-878-0200 Email: acoughlin@structint.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):

OSP-0101-10

BY: Timothy J Piland

DATE: 12/18/2019

Testing Laboratory

Company Name: QualTech by Curtiss-Wright

Contact Name: Jerry Newberry

Mailing Address: 4600 East Tech Drive, Cincinnati, OH 45245

Telephone: 513-528-7900 Email: jnewberry@curtisswright.com

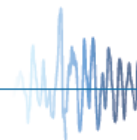
Company Name: Clark Dynamic Test Laboratory, Inc.

Contact Name: Devon Lohr

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

Telephone: (412) 387-1026 Email: dlohr@clarktesting.com

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Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.44 ($S_{DS} = 2.00$, $z/h = 1$); 1.13 ($S_{DS} = 2.50$, $z/h = 0$)

S_{DS} (Design spectral response acceleration at short period, g) = 2.00 ($z/h = 1$); 2.50 ($z/h = 0$)

a_p (In-structure equipment or component amplification factor) = 1

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 ($S_{DS} = 2.00$); 0 ($S_{DS} = 2.50$)

Equipment or Component Natural Frequencies (Hz) = See Product Matrices

Overall dimensions and weight (or range thereof) = See Product Matrices

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) = OSP-0101-10

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = BY: Timothy J Piland

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 12/18/2019

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): Rack drawings

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

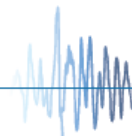
Signature: [Signature] Date: December 18, 2019

Print Name: Timothy J. Piland Title: SSE

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

Condition of Approval (if applicable): **Rack mounted units may only be installed in the same model rack, as tested, and cannot exceed the maximum wt. or C.G. as shown on the UUT Sheets.**

See rack reference sheet at end of OSP.



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1900374-CR-001 R1



Manufacturer: Vertiv Corporation						TABLE 1	
Model Line: Liebert GXT4 and APS Single Phase UPS							
Certified Product Construction Summary: Carbon Steel Housing							
Certified Options Summary:							
Mounting Configuration: Base Mounted - Rigid in Two Post Rack (See UUT Summaries for directions on installation) Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2016, IBC 2015		Seismic Certification Limits:			$S_{DS} = 2.0\text{ g} \quad z/h=1.0$ $S_{DS} = 2.5\text{ g} \quad z/h=0.0$		$I_P = 1.5$
Model Line	Model ^{1,2,3}	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Liebert GXT4 UPS	GXT4-500RT120	16.2	16.9	3.4	40	Input AC - 120 VAC	Extrap.
	GXT4-700RT120	16.2	16.9	3.4	40	Input AC - 120 VAC	Extrap.
	GXT4-1000RT120	16.2	16.9	3.4	40	Input AC - 120 VAC	Extrap.
	GXT4-1500RT120	19.7	16.9	3.4	55	Input AC - 120 VAC	Extrap.
	GXT4-2000RT120	19.5	16.9	3.5	59	Input AC - 120 VAC	1
	GXT4-3000RT120	23.7	16.9	3.4	71	Input AC - 120 VAC	Interp.
	GXT4-3000RT208	24	16.9	3.5	80	Input AC - 115-280 VAC	2
	GXT4-5000RT208	28	16.9	6.9	141	Input AC - 120/208 VAC	3
	GXT4-6000RT208	26.1	16.9	6.9	132	Input AC - 120/208 VAC	Interp.
	GXT4-6000RTL630	22.6	16.9	8.5	132	Input AC - 208 VAC	Interp.
	GXT4-8000RT208	26.5	16.9	10.3	213	Input AC - 120/208 VAC	Interp.
	GXT4-10000RT208	26.5	17	10.5	236	Input AC - 120/208 VAC	4
Liebert GXT4 External Battery Cabinets	GXT4-48VBATT	19.5	16.9	3.5	71		5
	GXT4-72VBATT	23.5	16.9	3.5	97		6
	GXT4-144VBATT	26	16.9	3.4	106		7
	GXT4-240VBATT	22.6	16.9	6.8	143		Interp.
	GXT4-288VBATT	26.1	16.9	6.9	184		8
Liebert APS AS5 Series UPS - 10 Bay	AS5	32	17.25	27.5	531		21B
Liebert Rack MPH2 Rack PDU	MPHB6224	10	19	3.5	23		23
	MPHB2341	10.5	19	1.75	8		24

Notes:

¹ See UTT Summary for center of gravity height limit per component.

² Maximum center of gravity height of configured rack: 36" for GXT4, MPH, and MP2

³ Maximum center of gravity height of configured rack: 38" for AS5

Notes:

¹ See UTT Summary for center of gravity height limit per component.

² Maximum center of gravity height of configured rack: 36" for GXT4, MPH, and MP2

³ Maximum center of gravity height of configured rack: 38" for AS5

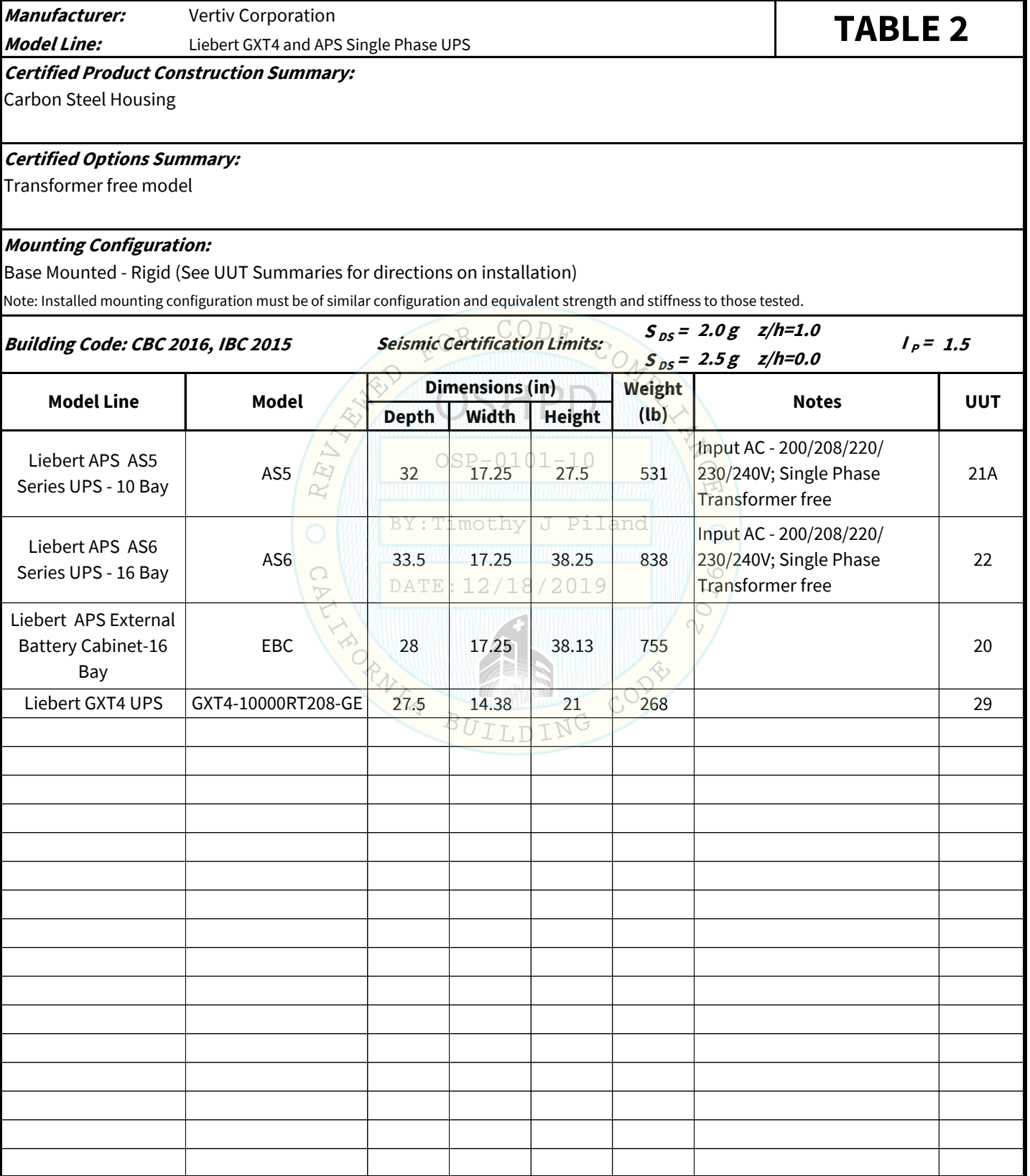
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UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation						
Model Line: Liebert GXT4 and APS Single Phase UPS						
UUT	Unit Description	Report Number	Testing Laboratory	S _{DS}	z/h	I _P
1	GXT4-2000RT120 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
2	GXT4-3000RT208 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
3	GXT4-5000RT208 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
4	GXT4-10000RT208 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
5	GXT4-48VBATT 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
6	GXT4-72VBATT 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
7	GXT4-144VBATT 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
8	GXT4-288VBATT 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
20	Liebert APS EBC Base mounted- rigid	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.11 3.15	1.0 0.0	1.5
21A	Liebert APS AS5 Series Base mounted-Rigid	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.43 2.64	1.0 0.0	1.5
21B	Liebert APS AS5 Series 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.09 3.25	1.0 0.0	1.5
22	AS6A1RCJGNNX223 Base mounted-Rigid	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.11 3.15	1.0 0.0	1.5
23	MPHB6224 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
24	MPHB2341 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0.0	1.5
28	MP2-115A 2-Post Configuration	Q18601.0, Rev.0	QualTech-NP Curtiss-Wright	2.33 2.75	1.0 0	1.5
29	GXT4-10000RT208-GE Base Mounted-Rigid	JID 19-00422, Rev.1	Clark Dynamic Test Laboratory, Inc.	2.0 2.5	1.0 0	1.5
Notes: UUT 21 was tested twice, first in a 2-Post Rack configuration, and then base mounted-rigid.						

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 1
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-2000RT120	
		Serial Number: 1712300555AFBB3

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
59	19-1/2	16-7/8	3-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 1 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 1 was attached to the 2-Post rack with a 2U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with eight (8) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-2000RT120

Serial Number: 1712300555AFBB3

UUT 1

Product Rack Configuration Summary:

Rack Configuration 1A: 2 Post Rack			
Height (in.)	Position on Rack	Position on Rack	Weight (lbs.)
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	236
8.5	GTX4-288VBATT	2	
6.75		1	184
5			

UUT 1

Model Number: GXT4-2000

UUT Weight (lbs.): 59

Total UUT Weight (lbs.): 1012

Rack Weight (lbs.): 30

Total Weight (lbs.): 1042

Overall Height (in.): 84

Center of Gravity for UUT (in.): 69.75 as limit

Overall CG Height (in.) = 36

DATE: 12/18/2019

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 2
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-3000RT208	
Serial Number:		1723400325AFBD3

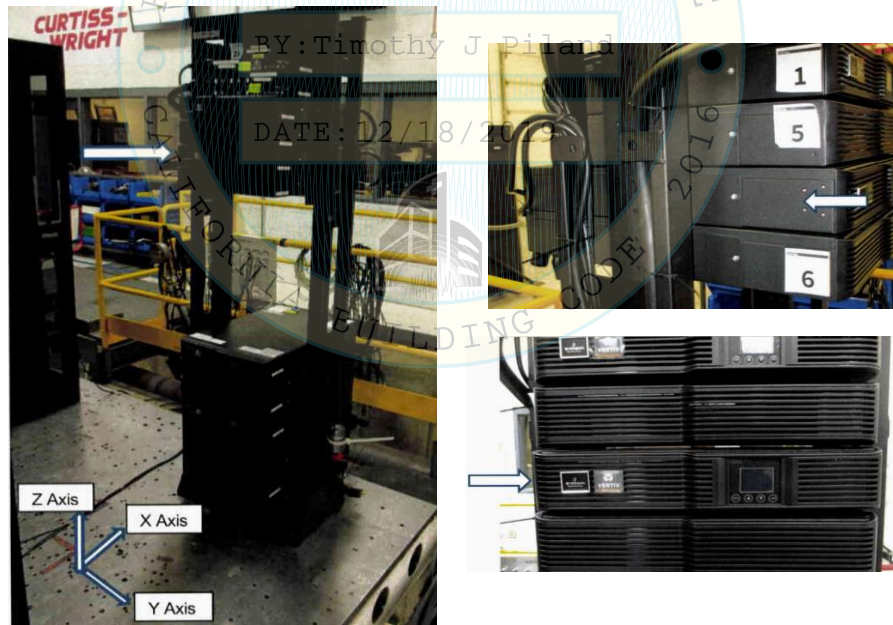
Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
80	24	16-7/8	3-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 2 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 2 was attached to the 2-Post rack with a 2U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with eight (8) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-3000RT208

UUT 2

Serial Number: 1723400325AFBD3

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	106
24.25	GXT4-144VBATT	11	
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	236
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			

UUT 2

Model Number: GXT4-3000

UUT Weight (lbs.): 80

Total UUT Weight (lbs.): 1012

Rack Weight (lbs.): 30

Total Weight (lbs.): 1042

Overall Height (in.): 84

Center of Gravity for UUT (in.): 62.75 as limit

Overall CG Height (in.) = 36

DATE: 12/18/2019

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 3
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-5000RT208	
		Serial Number: 1716902401BW923

Product Construction Summary:

Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
141	28	16-7/8	6-7/8	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74
		2.75	0.0	1.5				

Test Mounting Details:



UUT 3 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolt, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 3 was attached to the 2-Post rack with a 4U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with sixteen (16) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

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UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



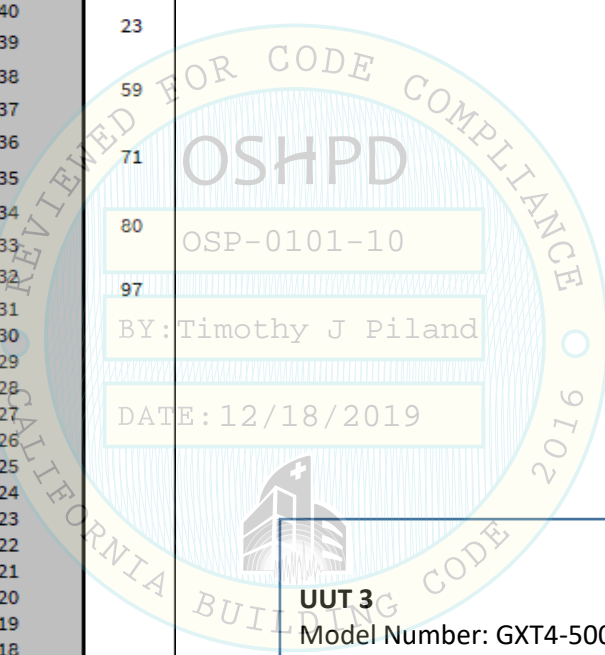
Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-5000RT208

UUT 3

Serial Number: 1716902401BW923

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84		RMU	
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	
17.25		7	236
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			



UUT 3

Model Number: GXT4-5000
 UUT Weight (lbs.) : 141
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT (in.): 29.5 as limit
 Overall CG Height (in.) = 36

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 4
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-10000RT208	
		Serial Number: 1723502372BW953

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
236	26-1/2	17	10-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 4 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 4 was attached to the 2-Post rack with a 4U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with sixteen (16) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



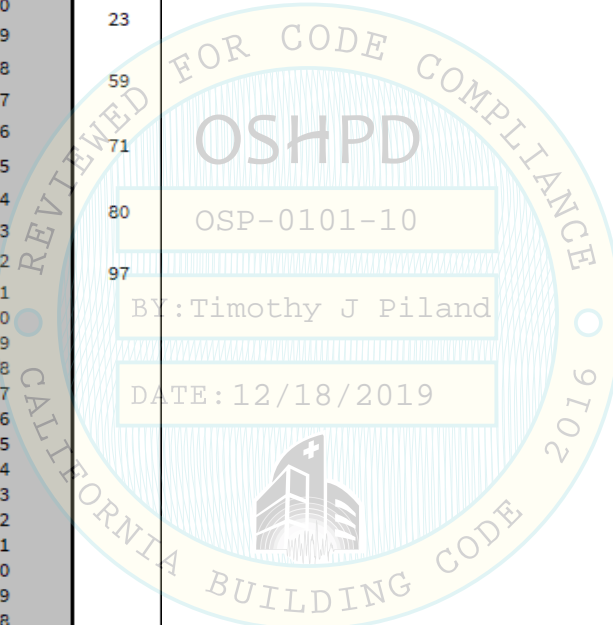
Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-10000RT208

UUT 4

Serial Number: 1723502372BW953

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	
29.5	GTX4-5000	14	141
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5	UUT 4	10	
20.75	GXT4-10000	9	
19		8	236
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	
8.5	GTX4-288VBATT	2	184
6.75		1	
5			



UUT 4

Model Number: GXT4-10000
 UUT Weight (lbs.) : 236
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT (in.): 17.25 as limit
 Overall CG Height (in.) = 36

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 5
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-48VBATT	
Serial Number:		1716500039AGC73

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
GXT4-9A48BATKIT

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
71	19-1/2	16-7/8	3-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 5 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 5 was attached to the 2-Post rack with a 2U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with eight (8) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-48VBATT

UUT 5

Serial Number: 1716500039AGC73

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	
17.25		7	236
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			

UUT 5

Model Number: GXT4-48VBATT

UUT Weight (lbs.): 71

Total UUT Weight (lbs.): 1012

Rack Weight (lbs.): 30

Total Weight (lbs.): 1042

Overall Height (in.): 84

Center of Gravity for UUT (in.): 66.25 as limit

Overall CG Height (in.) = 36

DATE: 12/18/2019

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 6
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-72VBATT	
Serial Number:		1715200425ADC83

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
GXT4-9A72BATKIT

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
97	23-1/2	16-7/8	3-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 6 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts with plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 6 was attached to the 2-Post rack with a 2U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with eight (8) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-72VBATT

UUT 6

Serial Number: 1715200425ADC83

Product Rack Configuration Summary:

Rack Configuration 1A: 2 Post Back			
Height (in.)	Position on Rack	Position on Rack	Weight (lbs.)
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	
17.25		7	236
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			

UUT 6

Model Number: GXT4-72VBATT

UUT Weight (lbs.): 97

Total UUT Weight (lbs.): 1012

Rack Weight (lbs.): 30

Total Weight (lbs.): 1042

Overall Height (in.): 84

Center of Gravity for UUT (in.): 59.25 as limit

Overall CG Height (in.) = 36

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 7
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-144VBATT	
		Serial Number: 1705000062BY983

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
GXT4-144VBATKIT

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
106	26	16-7/8	3-3/8	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 7 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 7 was attached to the 2-Post rack with a 2U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with eight (8) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



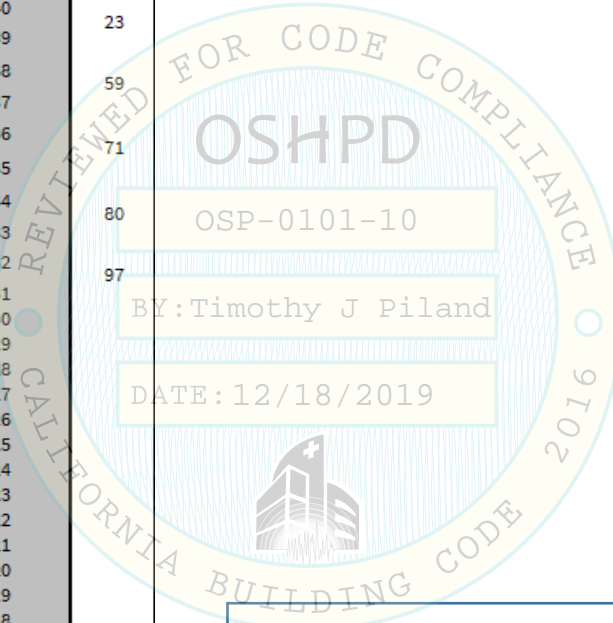
Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-144VBATT

UUT 7

Serial Number: 1705000062BY983

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	106
24.25	GXT4-144VBATT	11	
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	236
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	
8.5	GTX4-288VBATT	2	184
6.75		1	
5			



UUT 7

Model Number: GXT4-144VBATT
 UUT Weight (lbs.): 106
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT(in.): 24.24 as limit
 Overall CG Height (in.) = 36

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 8
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-288VBATT	
Serial Number:		17185000066BY993

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
GXT4-288VBATKIT

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
184	26-1/8	16-7/8	6-7/8	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.8	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 8 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts, plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 8 was attached to the 2-Post rack with a 4U TELECOMRKIT. The kit contains two brackets, each bracket was secured to the rack with sixteen (16) #12 screws that are supplied with the kit. The UUT was secured to the bracket with eight (8) M4 screws that are supplied with the UPS.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



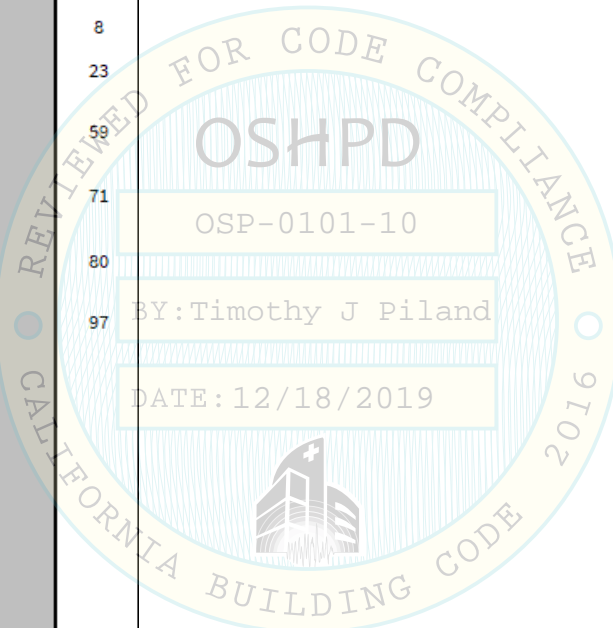
Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: GXT4-288VBATT

Serial Number: 17185000066BY993

UUT 8

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84		RMU	
80.25		43	
78.5	UUT28 MicroPod	42	7
76.75	UUT24	41	8
75	UUT 23	40	23
73.25	MPHB6224	39	
71.5	UUT 1	38	59
69.75	GXT4-2000	37	
68	UUT 5	36	71
66.25	GXT4-48VBATT	35	
64.5	UUT 2	34	80
62.75	GXT4-3000	33	
61	UUT 6	32	97
59.25	GXT4-72VBATT	31	
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	106
24.25	GXT4-144VBATT	11	
22.5		10	
20.75	UUT 4	9	236
19	GXT4-10000	8	
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			



UUT 8

Model Number: GXT4-288VBATT
 UUT Weight (lbs.): 184
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for Configuration (in.): 8.5 as limit
 Overall CG Height (in.) = 36

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 20
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	EBC-16 Bay	
Serial Number:		1613000009AW113

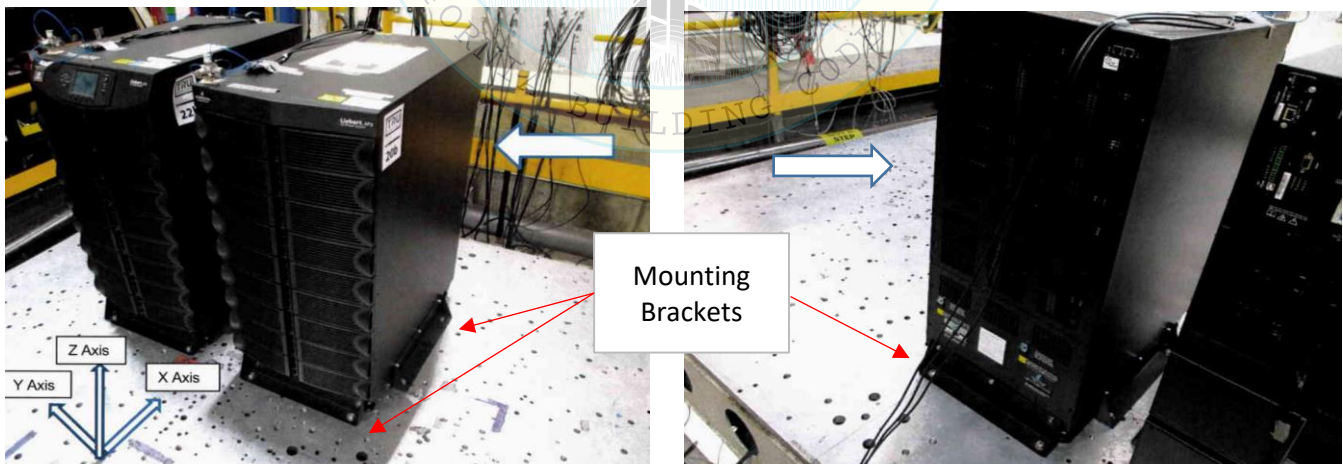
Product Construction Summary:

Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
BC 2016, IBC 201	28	17-1/4	38-1/8	26.17	7.56	23.14				
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		2.11	1.0	1.5	3.38	2.53	2.11	0.85
				3.15	0.0	1.5				

Test Mounting Details:



UUT 20 was base mounted-rigid to the shake table using four (4) mounting brackets (P/N 63122695), one on each side of the unit. Mounting brackets are supplied by the manufacturer and affixed to the shake table with two (2) 3/8"-16 Grade 5 hex bolts, lock washer and flat washer. A total of eight (8) 3/8" -16 bolts were used to mount unit to shake table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



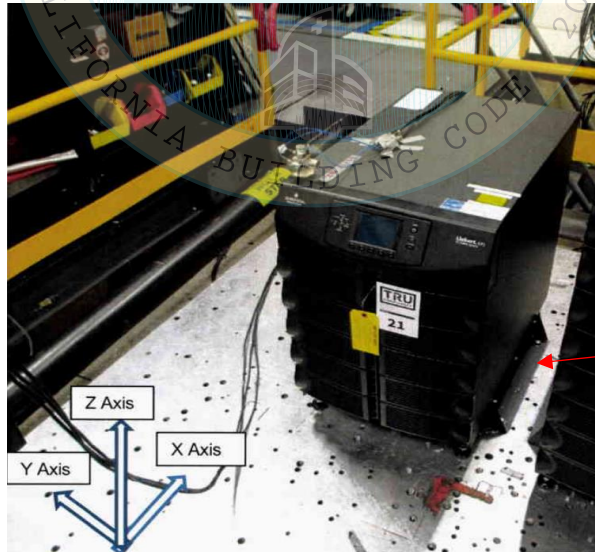
Manufacturer:	Vertiv Corporation	UUT 21A
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	AS5-10 Bay	
Serial Number:		1725000161AU043

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
Liebert Power Distribution Boxes (PD2-104), Transformer free option

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
BC 2016, IBC 2015	32	17-1/4	27-1/2	23.91	12.59	>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, IBC 2015		ICC-ES AC156		2.43	1.0	1.5	3.89	2.92	1.77	0.71
				2.64	0.0	1.5				

Test Mounting Details:



Mounting Bracket

UUT 21A was base mounted-rigid to the shake table using two (2) mounting brackets (P/N 63122695), one on each side of the unit. Mounting brackets are supplied by the manufacturer and affixed to the shake table with two (2) 3/8"-16 Grade 5 hex bolts, lock washer and flat washer. A total of eight (8) 3/8" -16 bolts were used to mount unit to shake table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 21B
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	AS5-10 Bay	
Serial Number:		1725000161AU043

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
Liebert Power Distribution Boxes (PD2-104), transformer free option

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
BC 2016, IBC 201	32	17-1/4	27-1/2	6.96	5.14	>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, IBC 2015		ICC-ES AC156		2.09	1.0	1.5	3.34	2.51	2.18	0.88
				3.25	0.0	1.5				

Test Mounting Details:



Four (4) M4 Screws

UUT 21B was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post racked was mounted to the shake table with four (4) 5/8"-11 Grade 8 hex bolts with plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 21 B was mounted to rack using Rack Solutions Shelf Kit (P/N 2USHL-100) and one and a half (1.5) 2-Post Conversion Brackets (P/N: 2POST-7UKIT) and two Chatsworth rear strap (P/N 12086-719). The unit was affixed to the shelf kit and brackets using eight (8) M4 bolts at each of the units ears.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: AS5-10 Bay

UUT 21B

Serial Number: 1725000161AU043

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 2: <u>2 Post Rack</u>		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	23
73.25	MPHB6224	39	
71.5	UUT 1	38	59
69.75	GXT4-2000	37	
68	UUT 5	36	71
66.25	GXT4-48VBATT	35	
64.5	UUT 2	34	80
62.75	GXT4-3000	33	
61	UUT 6	32	97
59.25	GXT4-72VBATT	31	
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25		15	
29.5		14	
27.75		13	
26		12	
24.25		11	
22.5		10	
20.75		9	
19		8	
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25		3	
8.5		2	
6.75		1	
5			

531

UUT 21B

Model Number: AS5-10Bay
 UUT Weight (lbs.) : 531
 Total UUT Weight (lbs.): 876
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 906
 Overall Height (in.): 84
 Center of Gravity for UUT (in.): 20.75 as limit
 Overall CG Height (in.) = 38.6

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



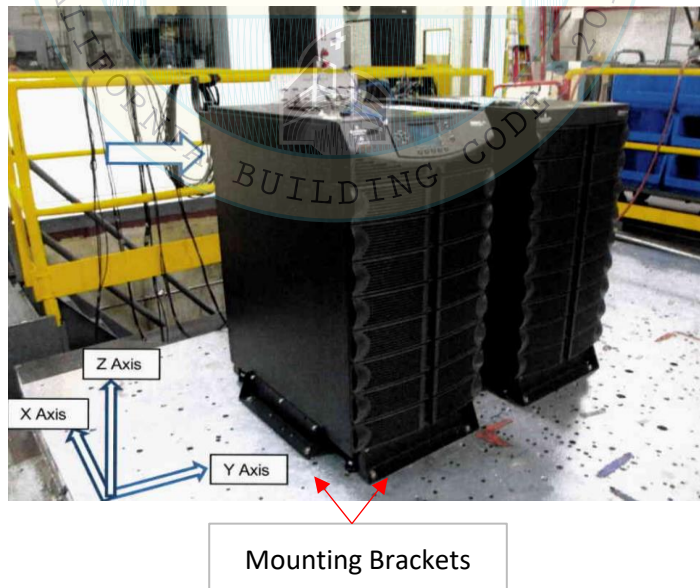
Manufacturer:	Vertiv Corporation	UUT 22
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	AS6-16 Bay	
Serial Number:		1703800256AU053

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:
Liebert Power Distribution Boxes (PD2-104), transformer free option

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
BC 2016, IBC 2015	33-1/2	17-1/4	38-1/4	9.92	14.72	30.85				
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, IBC 2015		ICC-ES AC156		2.11	1.0	1.5	3.38	2.53	2.11	0.85
				3.15	0.0	1.5				

Test Mounting Details:



UUT 22 was base mounted-rigid to the shake table using four (4) mounting brackets (P/N 63122695), one on each side of the unit. Mounting brackets are supplied by the manufacturer and affixed to the shake table with two (2) 3/8"-16 Grade 5 hex bolts, lock washer and flat washer. A total of eight (8) 3/8" -16 bolts were used to mount unit to shake table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 23
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	MPHB6224	
Serial Number:		V16J2600147

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
23	10	19	3-1/2	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.8	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:

BY: Timothy J Piland
DATE: 12/18/2019

Four (4) M4 Screws



UUT 23 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts with plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 23 was attached to the 2-Post rack using four (4) M4 screws at it ears. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: MPHB6224

Serial Number: V16J2600147

UUT 23

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84	RMU		
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	23
73.25	MPHB6224	39	
71.5	UUT 1	38	59
69.75	GXT4-2000	37	
68	UUT 5	36	71
66.25	GXT4-48VBATT	35	
64.5	UUT 2	34	80
62.75	GXT4-3000	33	
61	UUT 6	32	97
59.25	GXT4-72VBATT	31	
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	106
24.25	GXT4-144VBATT	11	
22.5		10	
20.75	UUT 4	9	236
19	GXT4-10000	8	
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			

UUT 23

Model Number: MPHB6224
 UUT Weight (lbs.) : 23
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT(in.): 73.25" limit
 Overall CG Height (in.) = 36

DATE: 12/18/2019

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 24
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	MPHB2341	
Serial Number:		V16E2600129

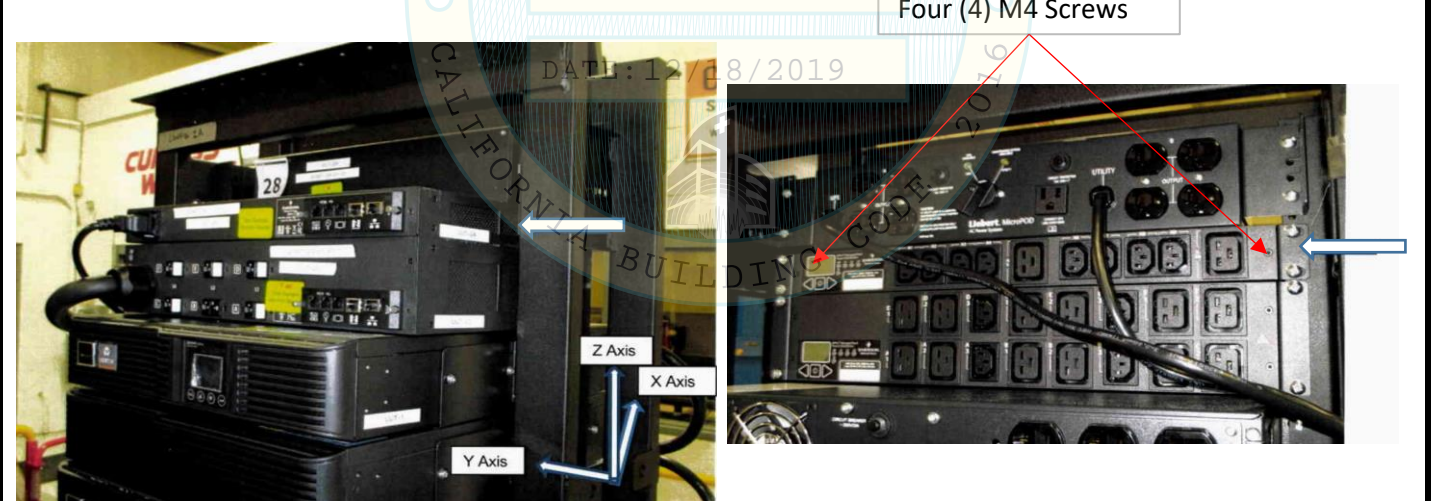
Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
8	10-1/2	19	1-3/4	7.20	5.72	>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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.8	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:



UUT 24 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts with plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 24 was attached to the 2-Post rack using four (4) M4 screws at the ears. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: MPHB2341

UUT 24

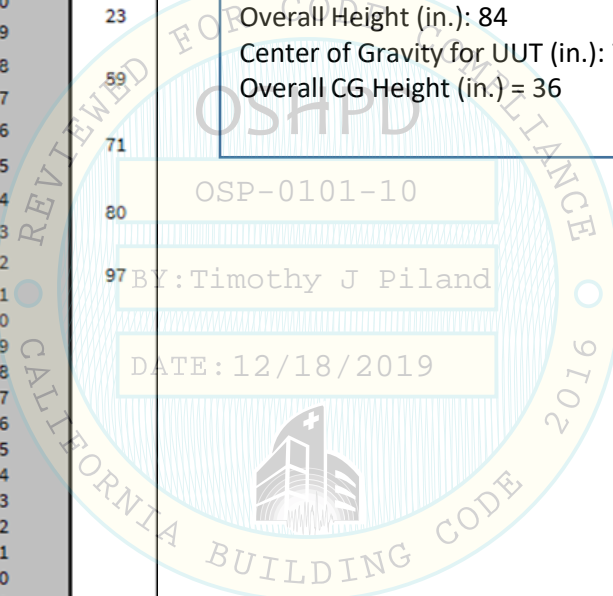
Serial Number: V16E2600129

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84		RMU	
80.25			
78.5		UUT28	43
76.75		MicroPod	42
75		UUT24	41
73.25		UUT 23	40
71.5		MPHB6224	39
69.75		UUT 1	38
68		GXT4-2000	37
66.25		UUT 5	36
64.5		GXT4-48VBATT	35
62.75		UUT 2	34
61		GXT4-3000	33
59.25		UUT 6	32
57.5		GXT4-72VBATT	31
55.75			30
54			29
52.25			28
50.5			27
48.75			26
47			25
45.25			24
43.5			23
41.75			22
40			21
38.25			20
36.5			19
34.75			18
33			17
31.25		UUT 3	16
29.5		GTX4-5000	15
27.75			14
26			13
24.25		UUT 7	12
22.5		GXT4-144VBATT	11
20.75			10
19		UUT 4	9
17.25		GXT4-10000	8
15.5			7
13.75			6
12			5
10.25		UUT 8	4
8.5		GTX4-288VBATT	3
6.75			2
5			1

UUT 24

Model Number: MPHB2341
 UUT Weight (lbs.): 8
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT (in.): 75.88" limit
 Overall CG Height (in.) = 36



UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 28
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	MP2-115A	
Serial Number:		1716100024AG333

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

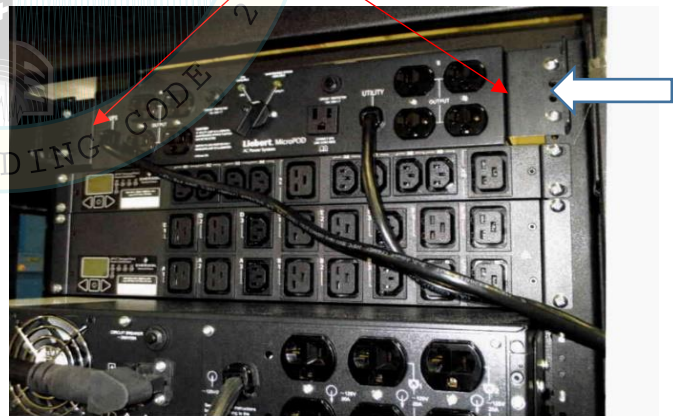
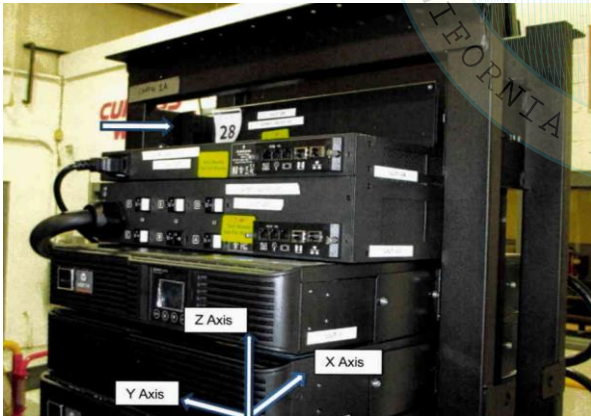
UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
7	3	15	3-1/2	7.20	5.72	>33

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, IBC 2015	ICC-ES AC156	2.33	1.0	1.5	3.73	2.80	1.84	0.74	
		2.75	0.0	1.5					

Test Mounting Details:

BY: Timothy J Piland
DATE: 12/18/2019

Four (4) M4 Screws



UUT 28 was mounted to a 2-Post B-Line (Eaton) Seismic Relay Rack (P/N SB85219084) 19" (W) x 84" (H). The 2-Post rack was base mounted-rigid to the shake table with four (4) 5/8"-11 Grade 8 hex bolts with plate washer (provided with 2-Post rack) and 5/8" lock washers. UUT 28 was attached to the 2-Post rack using four (4) M4 screws at the ears. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer: Vertiv Corporation
Model Line: Liebert GXT4 and APS Single Phase UPS
Model Number: MP2-115A

UUT 28

Serial Number: 1716100024AG333

Product Rack Configuration Summary:

Height (in.)	Rack Configuration 1A: 2 Post Rack		Weight (lbs.)
	Position on Rack	Position on Rack	
84		RMU	
80.25	UUT28	43	7
78.5	MicroPod	42	
76.75	UUT24	41	8
75	UUT 23	40	
73.25	MPHB6224	39	23
71.5	UUT 1	38	
69.75	GXT4-2000	37	59
68	UUT 5	36	
66.25	GXT4-48VBATT	35	71
64.5	UUT 2	34	
62.75	GXT4-3000	33	80
61	UUT 6	32	
59.25	GXT4-72VBATT	31	97
57.5		30	
55.75		29	
54		28	
52.25		27	
50.5		26	
48.75		25	
47		24	
45.25		23	
43.5		22	
41.75		21	
40		20	
38.25		19	
36.5		18	
34.75		17	
33		16	
31.25	UUT 3	15	141
29.5	GTX4-5000	14	
27.75		13	
26	UUT 7	12	
24.25	GXT4-144VBATT	11	106
22.5		10	
20.75	UUT 4	9	
19	GXT4-10000	8	236
17.25		7	
15.5		6	
13.75		5	
12		4	
10.25	UUT 8	3	184
8.5	GTX4-288VBATT	2	
6.75		1	
5			

UUT 28

Model Number: MP2-115A
 UUT Weight (lbs.): 7
 Total UUT Weight (lbs.): 1012
 Rack Weight (lbs.): 30
 Total Weight (lbs.): 1042
 Overall Height (in.): 84
 Center of Gravity for UUT (in.): 78.5 limit
 Overall CG Height (in.) = 36

OSP-0101-10

BY: Timothy J Piland

DATE: 12/18/2019

UNIT UNDER TEST (UUT) SUMMARY SHEET

1900374-CR-001 R1



Manufacturer:	Vertiv Corporation	UUT 29
Model Line:	Liebert GXT4 and APS Single Phase UPS	
Model Number:	GXT4-10000RT208-GE	
Serial Number:		N/A

Product Construction Summary:
Carbon Steel Casing

Options/Subcomponent Summary:

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
268	27.5	14.375	21	29.67	25.52	>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, IBC 2015	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67	
		2.5	0.0	1.5					

Test Mounting Details:

BY: Timothy J Piland

DATE: 12/18/2019



Mounting Bracket



Mounting Brackets

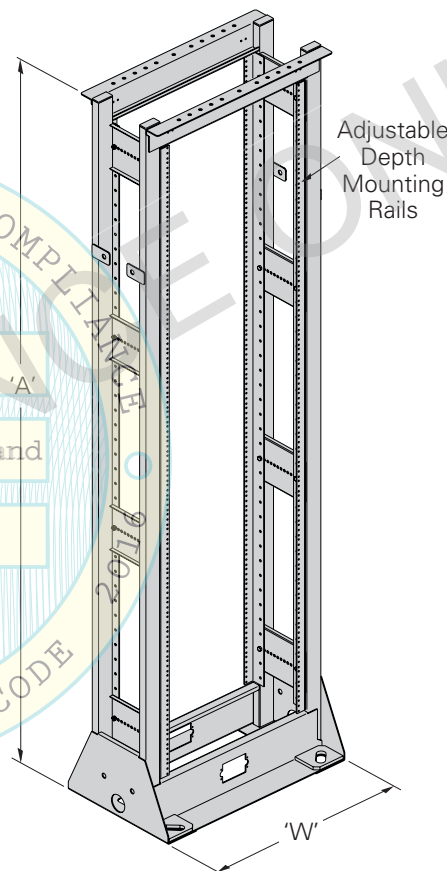
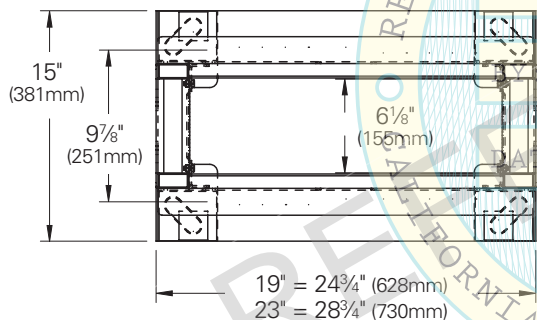
UUT 29 was base mounted-rigid to the shake table using two (2) mounting brackets (P/N 63240chm), one on each side of the unit. Mounting brackets are supplied by the manufacturer and affixed to the shake table with five (5) 1/2"-13 hex head grade 8 bolts with flat washers and lock washers. A total of ten (10) 1/2"-13 bolts were used to mount unit to shake table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

Network Equipment Racks & Accessories

Two-Post Relay Rack

Two-Post Seismic Relay Rack 19" & 23" Panel Mounting, Welded Steel

- Independently tested to NEBS GR-63-CORE Seismic Zone 4 standard; and for 900 lbs. (408kg) of equipment
- Independent testing conducted in accordance with ICBO AC156 standard for use up to 900 lbs. (408kg)
- Conformance to EIA/ECA-310-E
- Mounting rail spacing is adjustable from 3" (76mm) to 8" (203mm)
- 43 RMU (rack mounting units)
- Open top, bottom, and sides permit unlimited cable management options
- Industry standard mounting holes on sides allow attachment of vertical cable managers
- Top angles drilled for runway attachment
- Openings in front and rear of base for duplex receptacle mounting
- Holes for grounding provided in four locations
- Tubular steel frame provides a high degree of strength to weight ratio
- See page ii for link to OPM approvals
- Concrete installation requires (4) AWA-62-350 (sold separately)
- Finish ____: Flat black powder coat (FB)
Telco gray powder coat (TG)



Part Number	'A' Height In. (mm)	'W' Spacing In. (mm)	Mounting Spaces	Shipping Weight Lbs. (kg)
19" (482mm) Rack Width				
SB85219084 _____	84" (2133)	24 3/4" (628)	43	113 (51.3)
SB85219096 _____	96" (2438)	24 3/4" (628)	49	124 (56.2)
23" (584mm) Rack Width				
SB85223084 _____	84" (2133)	28 3/4" (730)	43	117 (53.1)
SB85223096 _____	96" (2438)	28 3/4" (730)	49	127 (57.6)

Specify part number and finish when ordering.