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ORV3 Development Update



Rack & Power

ORV3 Development Update

Steven Moore, Project Manager, Rittal





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ORV3 vs ORV2 Features

Open Rack V2	Open Rack V3
No	Yes
40OU/None	440U/48RU
No	Yes
No	Yes
No	Yes
1400kg	1600kg
No	Yes
Yes	Yes
	Open Rack V2 No No No No 40OU/None No No No No 1400kg No Yes



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Rack Testing

- ASTM, Facebook and Rittal tests

	Tests	Configuration	Test Details	
	Transit Packaging tests		Simulation of rack during transit	
1	Random Vibration Transportation test	1	3 Hz@ 0.0033g2/Hz rising @ 11.5 Db/Oot. 4 Hz to 16 Hz @ 0.01g2/Hz 16 Hz to 30 Hz @ 0.001g2/Hz 80 Hz to 200 Hz @ 0.0001g2/Hz Overall level 0.52Grms, test duration 60 minutes per axis, 180 minutes complete test.	
2	Transport Test (Vehicle Vibration)		1000Km approz, real life Truck Vibration	
3	FLT handling Rotational Edge drops		6" drop z 4 edges (ASTMD4169 sect.10.3.3.1(3))	
4	FLT handling Rotational flat drops		6" drop z 4 opp. Edges (ASTMD4169 sect.10.3.1.1)	
6	Side Impact		All 4 sides at 1.0m/s (ASTMD4169 sect.10.3,1.3)	
7	Tilt test	2	17 ⁻ degrees before tip, front/rear/side (ASTMD6179 sect.10.3)	
8	Loaded ¥ibration test on shock pallet.		ASTM D4169-16 DC3, 180 minutes over 3 azis, over High/Medium/Iow levels. X-azis: 40 minutes Iow level; 15 minutes Medium level; 5 minutes High level. Y-azis: 40 minutes Iow level: 15 minutes medium level; 5 minutes High	
	Deploying Rack, Dynamic tests			
9	Levelling foot test		Raise/Lower all 4 feet for 3 cycles	
11	Rolling test		200m @ 2 KM/hr	
2	Gap test	2	1.0" Gap traversed ±5 (Reduce Gap to This distance)	
3	Rolling test	2	2 200m @ 2 KM/hr	
5	Rolling test		200m @ 2 KM/hr	
6	Drop %" Ramp (Replaces #10)		Ramp Drop traversed 15 (Replaces Test 10)	
7	Rolling test	3	50m @ 2 KM/hr	
Ba	10 ⁻ Tilt test	2	U.L. 62368 Sect 8.6.2.2 (replacing 60950 Sect. 4.1) Stability testing & ORv	
8	10 Tilt test with Stabilizers	2	U.L. 62368 Sect 8.6.2.2 (replacing 60950 Sect. 4.1) Stability testing & ORy	
20	OU shelf loading	Na	Dynamic loading at 32kg/pair Over 25mm of leading edge dropped from 30	
21	OU shelf loading		Static loading 50kg/pair over 25mm of leading edge	
13	Mechanical (Additional)			
2	Nutsert Torque M12	Na	Test to Resist 20NM Failure Torque	
3 Nutsert Torque M8		Test to Besist 20NM		
	Na	Failure Torque		
4 B	Busbar upper Securing - Canopy / Busbar ca-	Na	Deformation at 8NM	
		Na	Deformation at 9NM (Over torque to M5 - DIN7500 min. Breaking Torque	
5	Rail "pull out" force.	Na	Furce tu Pull "clipped in" Shelf frum Rack, Fur O.U. Shelf, Puuer Shelf & Puuer Shelf	
	Electrical tests			
6	Resistance testing of Basbar cage		To U.L. 50 42.1 - Polymeric Enclosure Bonding Test, Test with all 4x Fasteners and ONLY Lower fasteners	
1				







- Front vertical update (front impact failure)







- Cable manager update (front impact failure)





- Middle beam update (brace failure)







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- Castor update (testing failure)



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Rack Frame Improvements

- Levelling foot update (vertical change)







Rack Frame Improvements

- Manifold interface updates (Canopy & base tray)











Cooling Interface FEA



Supplier 1 analysis

- Displacements in system
- Scaled to show shape.

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Cooling Interface FEA



Supplier 2 analysis

- Displacements in system
- Scaled to show shape.

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CONTOUR: DISPLACEMENT (mm) (TOTAL) DEFORMED TOTAL: (MIN=0, MAX=1.12404) OUTPUT SET: SUBCASE 1

1.030

0.984

0.937

0.890 0.843 0.796 0.749

0.703

0.656

0.609

0.562

0.515

0.468

0.422

0.375

0.328 0.281 0.234 0.187

0.141

0.047



Air Flow Management

- Front and rear sealing strips

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Air Flow Management

- Hot aisle containment baffles



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Brace Beam Development

- Moveable centre brace (+-4 OU)

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Brace Beam Development







Recent Test Results

- Front impact test Passed
- Castor test Passed
- Middle beam test Passed
- Shock & vibe test Passed
- Transport test Passed
- Levelling foot test Minor failure (retest required)





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Call to Action

• Where to find additional information (URL links)

Project Wiki with latest specification : <u>https://www.opencompute.org/wiki/Open_Rack/SpecsAndDesigns</u>





Open Discussion



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Track Names

CE (Cooling Environments) DCF HW Mgmt Networking OSF R&P (Rack & Power)

Security Server Storage SI (Strategic Initiatives) TAP T&E (Telco & Edge)



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