

**Test Report** No.SDHL2102001841FT Date: Apr 19, 2021 Page 1 of 11

GONINON PROPRIETARY LIMITED 48 BELHAVEN CRESCENT, NEWSTEAD TASMANIA,7250,AUSTRALIA

Sample Description : OFFICE CHAIR

Item No. : EM-4

As above test item and its relevant information regarding to the submission are provided and confirmed by the applicant. SGS is not liable to either the test item or its relevant information, in terms of the accuracy, suitability, reliability or/and integrity accordingly.

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Sample Receiving Date : Jan 26, 2021 Sample Resubmission Date : Apr 13, 2021

Test Performing Date : Feb 01, 2021 to Apr 19, 2021

Test Performed : Selected test(s) as requested by applicant

# **Test Result Summary**

No.	Test(s) Requested	Result(s)	Comments
1	ANSI/BIFMA X5.1-2017 (Type I, II, III)	PASS	1
For further details, please refer to the following page(s)			

Signed for and on behalf of SGS-CSTC Standards Technical Services Co., Ltd. Shunde Branch



**Authorized Signatory** 





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## **TESTS AND RESULTS**

Date: Apr 19, 2021

# **Test Conducted:**

ANSI/BIFMA X5.1-2017 General-Purpose Office Chairs – Tests.

## No. of Sample:

1 piece. For more sample information and pictures, please refer to the following page.

Chair Type: Type I, II, III.

Test and Requirements	Test Results	
Safety, Durability and Structural Adequacy		
5 Backrest Strength Test - Static - Type I and II		
5.4.1 Functional Load		
There shall be no loss of serviceability to the chair when 667 N (150 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 70 degrees ± 10 degrees to the plane of the	PASS	
backrest. The force is not intended to be maintained at 70 degrees ± 10 degrees		
throughout the loading of the backrest.  5.4.2 Proof Load		
There shall be no sudden and major change in the structural integrity of the chair, loss of serviceability is acceptable, when 1001 N (225 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 70 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 70 degrees ± 10 degrees throughout the loading of the backrest.	PASS	
6 Backrest Strength Test - Static - Type III		
6.4.1 Functional Load  There shall be no loss of serviceability to the chair when 667 N (150 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees ± 10 degrees throughout the loading of the backrest.	PASS	
6.4.2 Proof Load  There shall be no sudden and major change in the structural integrity of the chair, loss of serviceability is acceptable, when 1001 N (225 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees ± 10 degrees throughout the loading of the backrest.	PASS	
7 Drop Test - Dynamic		
7.4.1 Functional Load Test  There shall be no loss of serviceability when a test bag weighing 102 kg (225 lb.) is free fell from 152 mm (6 in.) above the uncompressed seat to the specified position on seat. Remove the bag, and set height to its lowest position and repeat the test for chairs with seat height adjustment features.	PASS	



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Test and Requirements	Test Results
7.4.2 Proof Load Test	
There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable when a test bag weighing 136 kg (300 lb.) is free fell from 152 mm (6 in.) above the uncompressed seat to the specified position on seat. Remove the bag, and set height to its lowest position and repeat the test for chairs with seat height adjustment features.	PASS
8 Swivel Test – Cyclic	
There shall be no loss of serviceability after 60,000cycles of rotation (360°) at a rate between 5 and 15 rotations per minute under a 122 kg (270 lb.) load on the seat. If the seat height is adjustable set the height to its lowest position, for all chairs, continue the test for an additional 60,000 cycles to a total of 120,000 cycles.	PASS
9 Tilt Mechanism Test – Cyclic	
There shall be no loss of serviceability to the tilt mechanism after 300,000cycles at a rate between 10 and 30 cycles per minute under a 109kg (240lbs.) load to the center of the seat.	PASS
Note: This test shall be performed on Type I and Type II chairs with tilting backrests.	
10 Seating Durability Tests – Cyclic	
There shall be no loss of serviceability to the chair after a test bag weighing 57kg (125lbs.) is free fell from 36 mm (1.4 in.) above the uncompressed seat to the specified position on seat for 100,000 cycles.  The drop height and/or seat height shall be adjusted during the test if the drop height changes by more than 13 mm (0.5 in.). The cycling device shall be set at a rate between 10 and 30 cycles per minute.  Note: Chairs with less than 44 mm (1.75 in.) of cushioning materials in the seat shall have foam added to bring total cushioning thickness to 50 mm ± 6 mm (2 in. ± 0.25 in.). Any additional foam added to the top of the seat shall have a 25% Indentation Force Deflection (IFD) of 200 N ± 22 N (45 lbf. ± 5 lbf.). Flexible seat surfaces (i.e., mesh, flexible plastic, etc.) are not considered cushioning materials.	PASS
After completing the impact test, alternately apply a load of 890 N (200 lbf.) through a 203 mm ± 13 mm (8 in. ± 0.51 in.) diameter loading device at one front corner flush to each structural edge at a rate of 10 to 30 cycles per minute for 20,000 cycles. Reposition the load to the other front corner, and perform the test for an additional 20,000 cycles.  There shall be no loss of serviceability to the chair after completion of both the impact and load-ease tests. If applicable, the chair base (center structure) shall not touch the test platform as a result of the impact loads.  Note: Applying the loads in an alternating sequence to attain a total of 40,000 cycles is an acceptable method of performing this test.  11 Stability Tests	PASS



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Test and Requirements	Test Results
Place a support fixture made of a 1.5 mm ± 0.15 mm (0.060 in. ± 0.006 in.) thick polypropylene, 356 mm (14 in.) wide and 711 mm (28 in.) tall against the chair back so that it approximates the contour of the back. Load the chair with 6 disks (10 kg each). Place the first disk on the seat using the Template from Appendix G. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture. Apply a rearward force parallel to the top surface of the highest disk. The location of the force application is 6 mm (0.25 in.) from the top of the disk. For chairs with seat height (as measured at the front of the bottom of the lowest disk when all disks are in the chair) less than 710 mm (28.0 in.), calculate the force as follows:  • F = 0.1964 (1195 – H) Newton. H is the seat height in mm.  • [F = 1.1 (47 – H) pounds force.]. H is the seat height in inches.  For chairs with seat height equal to or greater than 710 mm (28.0 in.), a fixed force of 93 N (20.9 lbf.) shall be applied.  The chair shall not tip over.	PASS
11.3.2 Rear Stability Test for Type I and II Chairs  Place a support fixture made of a 1.5 mm ± 0.15 mm (0.060 in. ± 0.006 in.) thick polypropylene, 356 mm (14 in.) wide and 711 mm (28 in.) tall against the chair back so that it approximates the contour of the back. Load the chair with 13 disks. Place the first disk on the seat using the Template from Appendix G. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture. If the chair does not tip over and the tilt mechanism does not tilt to its most rearward position (i.e., at its tilt stop) when the disks are placed in the chair, the chair shall also be tested according to 11.3.1 with the chair in the unlocked position.  The chair shall not tip over.	PASS
Test Procedure  Apply a vertical load of 61kg (135 lbf.), through a 200 mm (7.87 in.) diameter disk, the center of which is 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the seat. Apply a horizontal force of 20 N (4.5 lbf.) at the same height that the vertical force is applied. The force shall be coincident with the side-to-side centerline of the seat.  Test Procedure - Alternate  This alternate method may be used on chairs that have a seat surface that will support the stability loading fixture without the use of the front-stability loading disk(i.e., hard surfaced seats or seats with minimal cushion).  Apply a vertical load of 61kg (135 lbf.), by means of the front stability loading fixture at a point 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the chair. Apply a horizontal force of 20 N (4.5 lbf.) at the same height that the vertical force is applied. The force shall be coincident with the side-to-side centerline of the seat.  The chair shall not tip over as the result of the force application.	PASS



12 Arm Strength Test - Vertical - Static

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Test and Requirements	Test Results
Apply an initially vertical pull force of 750N (169lbs.) to the load adapter which is 127 mm (5 in.) long and at least as wide as the width of the arm shall be attached to the top of the arm rest structure such that the load will be applied at the apparent weakest point that is forward of the chair backrest, for one (1) minute.  There shall be no loss of serviceability. For a height adjustable arm, failure to hold its height adjustment position to within 6 mm (0.25 in.) from its original set position as the result of the loading is considered a loss of serviceability.	PASS
Apply an initially vertical pull force of 1125N (253 lbs.) to the load adapter which is 127 mm (5 in.) long and at least as wide as the width of the arm shall be attached to the top of the arm rest structure such that the load will be applied at the apparent weakest point that is forward of the chair backrest, for 15 seconds.  There shall be no sudden and major change in the structural integrity of the chair. For a height adjustable arm, a sudden drop in height of greater than 25 mm (1 in.) does not meet this requirement. Loss of serviceability is acceptable.	PASS
13 Arm Strength Test - Horizontal - Static	
Apply an initially horizontal pull force of 445 N (100 lbf.) to the load adapter which is a loading device or strap, not greater than 25 mm (1 in.) in horizontal width, shall be attached to the arm so that the load is initially applied horizontally to the armrest structure at the apparent weakest point (for armrests that pivot in the horizontal plane, apply the load at the pivot point), for one (1) minute in the outward direction. A functional load applied once shall cause no loss of serviceability.	PASS
Apply an initially horizontal pull force of 667 N (150 lbf.) to the load adapter which is a loading device or strap, not greater than 25 mm (1 in.) in horizontal width, shall be attached to the arm so that the load is initially applied horizontally to the armrest structure at the apparent weakest point (for armrests that pivot in the horizontal plane, apply the load at the pivot point), for 15 seconds in the outward direction.  A proof load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	PASS
A weight of 109 kg (240 lb.) shall be secured in the center of the seat. Apply a 445 N (100 lbf.) total force to the backrest at the specified position at a rate between 10 and 30 cycles per minute.  For chairs with backrest widths less than or equal to 406 mm (16 in.) at the height of the loading point, apply the load to the backrest for 120,000 cycles.  For chairs with backrest widths greater than 406 mm (16 in.) at the height of the loading point, apply the load to the backrest for 80,000 cycles + 20,000 cycles at the position 102 mm (4 in.) to the right of the vertical centerline + 20,000 cycles at the position 102 mm (4 in.) to the left of the vertical centerline  There shall be no loss of serviceability.  Note: With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees ± 10 degrees throughout the loading of the backrest.	PASS



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Test and Requirements	Test Results			
15 Backrest Durability Test - Cyclic - Type II and III				
A weight of 109 kg (240 lb.) shall be secured in the center of the seat. Apply a 334 N				
(75 lbf.) total force to the backrest at the specified position at a rate between 10 and 30				
cycles per minute.				
For chairs with backrest widths less than or equal to 406 mm (16 in.) at the height of				
the loading point, apply the load to the backrest for 120,000 cycles.				
For chairs with backrest widths greater than 406 mm (16 in.) at the height of the	PASS			
loading point, apply the load to the backrest for 80,000 cycles + 20,000 cycles at the	1 400			
position 102 mm (4 in.) to the right of the vertical centerline + 20,000 cycles at the				
position 102 mm (4 in.) to the left of the vertical centerline.				
There shall be no loss of serviceability.				
Note: With the backrest at its back stop position, apply a force that is initially 90 degrees				
± 10 degrees to the plane of the backrest. The force is not intended to be maintained at				
90 degrees ± 10 degrees throughout the loading of the backrest.				
16 Caster/Chair Base Durability Test - Cyclic	<u> </u>			
16.1 Caster/Chair Base Durability Test for Pedestal Base Chairs				
No loss of service after 2,000cycles over a hard surface with 3 obstacles and				
98,000 cycles over a smooth hard surface without obstacles under a 122kg (270lbs.)	PASS			
load at a rate of 10 ± 2 cycles per minute. Test stroke is 762±50mm (30±2in.)				
minimum. No part of the caster shall separate from the chair as a result of the				
application of the 22 N (5 lbf.) force.				
16.2 Caster / Chair Frame Durability Test for Non-pedestal Chairs with Casters				
No loss of service after 2,000cycles over a hard surface with 2 obstacles and 98,000cycles over a smooth hard surface without obstacles under a 122 kg (270 lb.)				
	N/A			
load on the seat at a rate of 10 ± 2 cycles per minute. Test stroke is 762±50mm (30±				
2in.) minimum. No part of the caster shall separate from the chair as a result of the				
application of the 22 N (5 lbf.) force.				
17 Leg Strength Test - Front and Side Application  17.3.2.1 Front Load Test- Functional Test				
The loading device shall be attached to the chair so that an initially horizontal force is				
applied inward and parallel to the front-to-rear axis of the chair, between 13 mm (0.5				
in.) and 38 mm (1.5 in.) from the bottom of a leg. A force of 334N (75lbf.) is applied				
once to each front leg individually for 1 minute.				
Functional load(s) shall cause no loss of serviceability.	N/A			
Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm	14/73			
(0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be				
applied to the apparent weakest point of the leg. Where the apparent weakest point is				
the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0				
in.) from the edge.				



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Test and Requirements			Test Results
17.3.2.2 Front Load Test-F The loading device shall be applied inward and parallel t in.) and 38 mm (1.5 in.) from once to each front leg individed Proof load(s) shall cause no chair. Loss of serviceability in	between 13 mm (0.5 N (113 lbf.) is applied	N/A	
Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm (0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be applied to the apparent weakest point of the leg. Where the apparent weakest point is the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0 in.) from the edge.			
17.4.2.1 Side Load Test- For The loading device shall be	ally horizontal force is		
applied inward and parallel t in.) and 38 mm (1.5 in.) from once to each front and rear I Functional load(s) shall caus Note: For chairs with casters (0.5 in.) from the point of cas applied to the apparent weak	o the front-to-rear axis of the chair, the bottom of a leg. A force of 334 eg individually for 1 minute.	between 13 mm (0.5 N (75lbf.) is applied  t not more than 13 mm The load shall be parent weakest point is	N/A
in.) from the edge.  17.4.2.2 Side Load Test- Pi	roof Test	·	
The loading device shall be applied inward and parallel t in.) and 38 mm (1.5 in.) from once to each front and rear I Proof load(s) shall cause no chair. Loss of serviceability i Note: For chairs with casters (0.5 in.) from the point of cas applied to the apparent weak	attached to the chair so that an initi o the front-to-rear axis of the chair, the bottom of a leg. A force of 503 eg individually for 1 minute. sudden and major change in the st	between 13 mm (0.5 N (113 lbf.) is applied ructural integrity of the t not more than 13 mm The load shall be parent weakest point is	N/A



18 Footrest Static Load Test - Vertical

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Test and Requirements	Test Results
Apply a force F1 of 445 N (100 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. If the footrest adjusts in height relative to the seat and allows for a force application 180 degrees (on the opposite side of the chair) from the primary force application, maintain force F1 and apply an additional force F2 of 445 N (100 lbf.) to the footrest at the opposing position for an additional one (1) minute. The F2 force shall also be applied uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge. If applicable, remove force F2, increase the force F1 to 200 lbf. for one (1) minute. There shall be no loss of serviceability or sudden loss of footrest height.	N/A
18.4.3 Proof Load  Apply a force of 1334 N (300 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	N/A
A 890 N (200-lbf.) force shall be applied uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure. When the weakest position is not obvious, several load application positions may be necessary to properly test the product. If the footrest moves more than 25 mm (1 in.) within the first 500 cycles, discontinue testing. If the footrest moves throughout the remainder of the test, reset it to its original position when it is within 12 mm (0.5 in.) from its lowest position.  The force shall be applied and removed 50,000 cycles at a rate between 10 and 30 cycles per minute.  There shall be no loss of serviceability. Adjustable footrests that move more than 25 mm (1 in.) in the first 500 cycles shall be considered to have lost their serviceability.	N/A
20 Arm Durability Test – Cyclic Simultaneously apply a force of 400 N (90 lbf.) to each arm initially at a 10 degrees ± 1 degree angle. The arm loading device must follow the arm as it deflects or pivots. The force shall be applied and removed for 60,000 cycles at a rate between 10 and 30 cycles per minute. The arm loading device should distribute the load over a length of 100 mm (4 in.) on the arm pad. Center of load shall not be applied more than 25 mm (1.0 in.) in from the inside edge of the arm pad. There shall be no loss of serviceability to the chair.	PASS
21 Out Stop Tests for Chairs with Manually Adjustable Seat Depth  A stranded metallic cable or equivalent shall be attached to the most rigid point of the vertical centerline of the seat. The opposite end of the cable shall extend in line forward from the seat and in line with the plane of the seat movement to a pulley and then downward to an attached weight of 25 kg (55 lb.). Place the seat in its most rearward position and restrain. Place a 74 kg (163 lb.) rigid mass in the center of the seat. The seat with the hanging weight shall be held at its most rearward position, then released, permitting it to move forward rapidly and impact the out stops. Repeat this procedure for a total of 25 cycles. There shall be no loss of serviceability to the unit.	PASS



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Appendix C Base Test - Static

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Test and Requirements			Test Results
22 Tablet Arm Chair Static Load Test  Apply the load through a 203 mm ± 13 mm (8.0 in. ± 0.51 in.) diameter area 25 mm (1 in.) from the edge of the surface at its apparent weakest point. Apply a load of 68 kg. (150 lb.) at the location described in 23.2 b) for one (1) minute and remove the load. The load applied once shall cause no sudden and major change in the structural integrity of the chair. After performing the test, the tablet arm must allow egress from			N/A
the unit; other losses of serviceability are acceptable.  23 Tablet Arm Chair Load Ease Test – Cyclic  Apply a load of 25kg (55 lb.) through a 203 mm ± 13 mm (8.0 in. ± 0.51 in.) diameter area 25 mm (1 in.) from the edge of the surface at its apparent weakest point, for a total of 100,000 cycles. The cycling device shall be set to operate at a rate of 14 ± 6 cycles per minute. There shall be no loss of serviceability to the unit.			N/A
24 Structural Durability Test- The unit base shall be restrained weight of 109 kg (240 lb.) in the to the unit frame midway between midpoint of the seat frame structure "push-pull" action, or alternately application on alternating sides application and removal and on	ed from horizontal movement on excenter of the seat. A cycling desent front and rear of the seat at the cture. The cycling device shall be a may be applied by alternating profit of the unit. One cycle shall consider inward force application and refer at the between 10 and 30 cycles.	a test surface, place a vice shall be attached he height of the e adjusted to apply a bull (or push) force sist of one outward force emoval. Apply a force of	N/A

**PASS** 

#### Remark:

N/A – Not applicable; N/R – Not requested; N/P – Not provided.

apply a second force of 11,120 N (2500 lbf.) for one (1) minute.

For the sample information and pictures, please refer to the following page.

There shall be no sudden and major change in the structural integrity of the base. The center column may not touch the test platform during the load applications when a

force of 11,120 N (2500 lbf.) is applied to the vertical support column, or test fixture that simulates the taper/base interface for one (1) minute. Remove the force, and then



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# **SAMPLE INFORMATION AND PICTURES**

Weight: 24.40 kg

Overall Dimensions: (700~735) mm D x 720 mm W x (1045~1190) mm H

Other Dimensions: Base radius 350 mm

## Sample as Received











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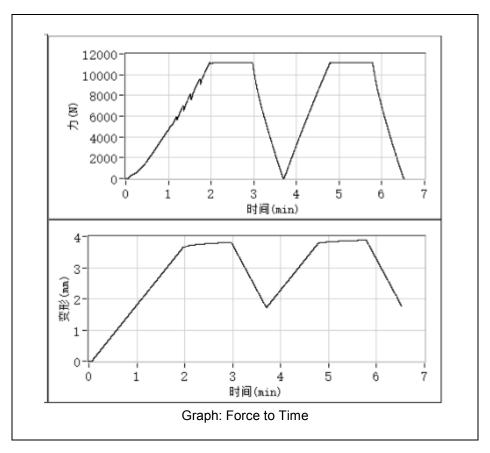


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## **Test Pictures with Details**

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\*\*\*End of Report\*\*\*



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