MERRYFAIR CHAIR SYSTEM SDN BHD
NO. 2, JALAN KORPORAT 1/KU9, TAMAN PERINDUSTRIAN MERU, KAPAR, 42200 SELANGOR, MALAYSIA.

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description	:	ANGGUN – OFFICE CHAIR
Supplier Item No.	:	1199 YM A78 V
Sample Receiving Date	:	Oct.15, 2019
Sample Resubmission Date	:	Nov.06, 2019
Test Performing Date	:	Oct.16, 2019 to Nov.12, 2019

Test Result Summary

Test(s) Requested	Result(s)
ANSI/BIFMA X5.1-2017 (Type I, III)	PASS

Summary:

1. For further details, please refer to the following page(s).

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

SDHL1910018631FT

Bill Wang
Approved signatory

TESTS AND RESULTS

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

No. of Sample:
4 pieces. For more sample information and pictures, please refer to the following page.

Chair Type: Type I, 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 backrest. The force is not intended to be maintained at 70 degrees ± 10 degrees throughout the loading of the backrest.	PASS
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

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. *Note: This test shall be performed on Type I and Type II chairs with tilting backrests.*	PASS
10 Seating Durability Tests – Cyclic	
10.3 Impact Test 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
10.4 Front Corner Load-Ease Test – Cyclic – Off-center 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.*	PASS
11 Stability Tests	

Test and Requirements	Test Results
11.3.1 Rear Stability Test for Type III 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 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
11.4 Front Stability 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	

Test and Requirements	Test Results
12.4.1 Functional Load 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
12.4.2 Proof Load 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	
13.4.1 Functional Load 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
13.4.2 Proof Load 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
14 Backrest Durability Test - Cyclic - Type I 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

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 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
16 Caster/Chair Base Durability Test - Cyclic	
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 98,000cycles over a smooth hard surface without obstacles under a 122kg (270lbs.) 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.	PASS
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.) 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.	N/A
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. *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.*	N/A

Test and Requirements	Test Results
17.3.2.2 Front Load Test- Proof 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 503N (113 lbf.) is applied once to each front leg individually for 1 minute. Proof load(s) shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable. *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.*	N/A
17.4.2.1 Side 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 and rear leg individually for 1 minute. Functional load(s) shall cause no loss of serviceability. *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.*	N/A
17.4.2.2 Side Load Test- Proof 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 503N (113 lbf.) is applied once to each front and rear leg individually for 1 minute. Proof load(s) shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable. *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.*	N/A
18 Footrest Static Load Test - Vertical	
18.4.1 Functional Load 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

Test and Requirements	Test Results
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
19 Footrest Durability Test - Vertical – Cyclic 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
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 the unit; other losses of serviceability are acceptable.	N/A
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

Test and Requirements	Test Results
24 Structural Durability Test – Cyclic The unit base shall be restrained from horizontal movement on a test surface, place a weight of 109 kg (240 lb.) in the center of the seat. A cycling device shall be attached to the unit frame midway between front and rear of the seat at the height of the midpoint of the seat frame structure. The cycling device shall be adjusted to apply a "push-pull" action, or alternately may be applied by alternating pull (or push) force application on alternating sides of the unit. One cycle shall consist of one outward force application and removal and one inward force application and removal. Apply a force of 334 N (75 lbf.) at an appropriate rate between 10 and 30 cycles per minute, total 25,000 cycles. There shall be no loss of serviceability.	N/A
Appendix C Base Test – Static 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 apply a second force of 11,120 N (2500 lbf.) for one (1) minute.	PASS

Remark:

1. N/A – Not applicable; N/R – Not requested; N/P – Not provided.
2. For the sample information and pictures, please refer to the following page.

SAMPLE INFORMATION AND PICTURES

Weight: 17.35 kg

Overall Dimensions: 695~780 mm D x 720 mm W x 1100~1290 mm H

Other Dimensions: Base radius 350 mm

Sample as Received

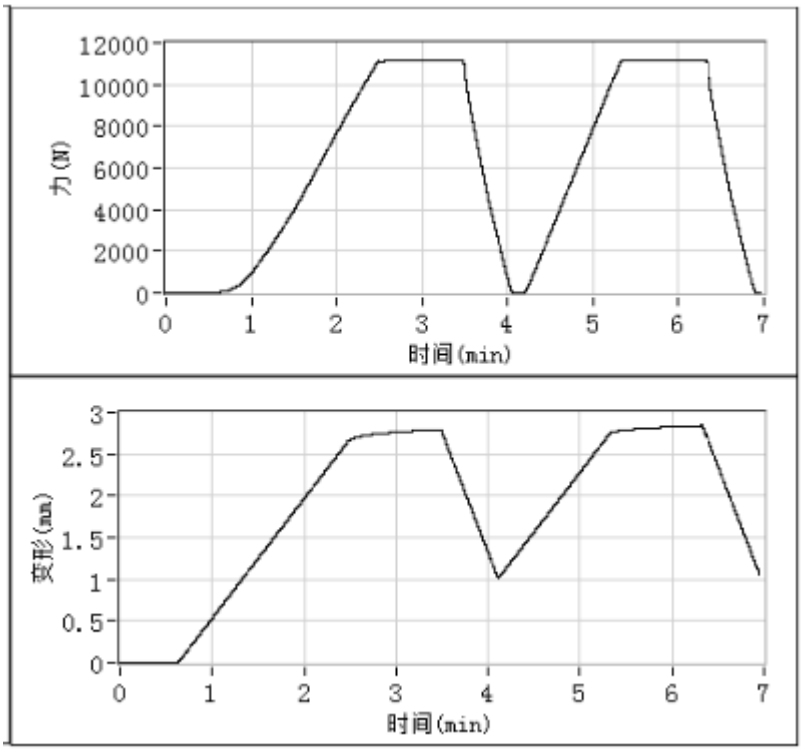
View 1

View 2

View 3

View 4

Test Pictures with Details



Graph: Force to Time

End of Report