

TEST REPORT

APPLICANT : SECRETLAB SG PTE LED

ADDRESS : 994 Bendemeer Road #05-03 Singapore 339943

SAMPLE DESCRIPTION : TT20-PU-Carbon

SAMPLE RECEIVED DATE : 03-Apr-2019

TURN AROUND TIME : 03-Apr-2019 to 19-Apr-2019

TEST REQUESTED : Selected test(s) as requested by client

TEST METHOD : Please refer to next page(s)

TEST RESULTS : Please refer to next page(s)

***** FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) *****

Signed for and on behalf of
Eurofins Product Testing Service (Shanghai) Co., Ltd



Joyce Liu
Lab Manager

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SAMPLE PHOTO



EFSH19040410-CG-01

TO BE CONTINUED

TEST RESULT

Test Method and Requirement:

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

Sample description:	
Type of chair	<input checked="" type="checkbox"/> Type I. Tilting chair: A chair with a seat that tilts with a counterbalancing force. Chairs of this type are typically referred to as synchro-tilt, center-tilt, knee-tilt, etc. <input type="checkbox"/> Type II. Fixed seat angle, tilting backrest: A chair that provides a fixed seat angle with a tilting backrest. <input type="checkbox"/> Type III. Fixed seat angle, fixed backrest: A chair that provides a fixed seat angle with a fixed backrest. This may include chairs with legs, including sled base chairs.
Defects observed before testing	No defects observed before testing.

1). Number of test sample 1 Piece

2). Test Results:

Clause	Test Method /Test requirement	Result
5 Backrest Strength Test - Static - Type I and II (Functional Load)	A force of 667 N(150lbf) shall be applied to the backrest at the backstop position for one minute	Pass
5 Back Strength Test - Static - Type I and II (Proof Load)	A force of 1001 N (225bf) shall be applied to the backrest at the backstop position for one minute.	Pass
6 Backrest Strength Test - Static - Type III (Functional Load)	Note: This test does not apply to chairs with backrest height less than 200 mm (7.9 in.). No loss of serviceability when 667N (150lbs.) is applied for 1 min. Applied 90° to the back at 16in. above the seat.	N/A
6 Back Strength Test - Static - Type III (Proof Load)	Note: This test does not apply to chairs with backrest height less than 200 mm (7.9 in.). No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 1001N (225lbs.) is applied for 1 min. Applied 90° to the back at 16in. above the seat.	N/A
7 Drop Test – Dynamic (Functional Load)	No loss of serviceability when 102kg (225lbs.) weight free falls from 6in. height to the center of the seat.	Pass
7 Drop Test Dynamic (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 136kg (300lbs.) weight free falls from 6in. height to the center of the seat.	Pass
8 Swivel Test - Cyclic	No loss of serviceability after 60,000cycles of rotation (360°) under a 122kg (270lbs.) load on the seat at its max. height. Seat shall then withstand another 60,000cycles of rotation at its lowest seating position. Total 120,000cycles.	Pass
9 Tilt Mechanism Test – Cyclic	This test shall be performed on Type I and Type II chairs with tilting backrests No loss of serviceability after 300,000cycles under a 109kg (240lbs.) load to the center of the seat	Pass

<p>10 Seating Durability Tests-Cyclic</p>	<p>These tests apply to all chair types If adjustable features are available, all adjustments shall be set at normal use conditions No loss of serviceability in 100,000cycles impact. A weight of 57kg (125lbs.) free falls onto the seat from 1.2 in (30mm) . height.</p> <p><i>Note 1: If the cushion height less than 44mm, another foam shall be added to a total height of 50±6mm.</i> <i>Note 2: Flexible seat surfaces (i.e., mesh, flexible plastic, etc.) are not considered cushioning materials.</i></p>	<p>Pass</p>
<p>10.4 Front Corner Load Ease Test-Cyclic –off Center</p>	<p>No loss of serviceability after load each seat front corner with 734N (165 lbs.) for 20,000 cycles, total 40,000 cycles.</p> <p><i>Note1: this test is done after "Impact test" on the same sample.</i> <i>If</i> <i>Note2: if cushion material was used during impact testing (11.3.1c) it may remain in place during this testing to avoid uneven/point loading of the seat.</i></p>	<p>Pass</p>
<p>11 Stability Tests</p>	<p>For chairs with adjustable features, all adjustments shall be set at the apparent least stable condition for rearward stability, such as: a) maximum height of seat or backrest, or both, b) rearmost seat or backrest position, or both, c) the least stable condition of casters or glides. Place a support fixture made of a 1.5 mm ± 0.4 mm (0.060 in. ± 0.015 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 Place the first disk on the seat so it touches the support fixture. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture as shown in following figure. As each disk is added, the backrest may move such that the lower disks do not remain against the support fixture; this is acceptable, do not reposition the disks. Apply a horizontal force to 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.</p> <p>The chair shall not tip over after test.</p> <p><i>Note: Rearward stability tests apply only to chairs with backrests greater than 200 mm (7.9 in.) in height as measured with the BIFMA CMD.</i></p>	<p>NA</p>

<p>11 Stability Test - rearward for type I & II chair</p>	<p>For chairs with adjustable features, all adjustments shall be set at the apparent least stable condition for rearward stability, such as: a) maximum height of seat or backrest, or both, b) rearmost seat or backrest position, or both, c) the least stable condition of casters or glides. Place a support fixture made of a 1.5 mm ± 0.4 mm (0.060 in. ± 0.015 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 (See Appendix B). Place the first disk on the seat so it touches the support fixture. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture as shown in Figure 12b. As each disk is added, the backrest may move such that the lower disks do not remain against the support fixture; this is acceptable, do not reposition the disks. 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 12.3.1 with the chair in the unlocked position.</p> <p>The chair shall not tip over after test.</p> <p><i>Note: Rearward stability tests apply only to chairs with backrests greater than 200 mm (7.9 in.) in height as measured with the BIFMA CMD.</i></p>	<p>Pass</p>
<p>11 Stability Test – Front Stability</p>	<p>The chair is obstructed with a 13mm (½ in.) obstruction to the chair casters/legs. A downward load of 600N (135lbs.) is centered 60mm (2.4in.) from the seat front center edge. The seat shall withstand a 20N (4.5lbf.) horizontally from the front seat edge without tipping.</p>	<p>Pass</p>
<p>12 Arm Strength Test Vertical - Static (Functional Load)</p>	<p>No loss of serviceability when 750N (169lbs.) is applied for 1 min. The vertical load is uniformly applied along a 127mm (5in.) length at the apparent weakest point. 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.</p>	<p>Pass</p>
<p>12 Arm Strength Test Vertical-Static (Proof Load)</p>	<p>No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 1125N (253lbs.) is applied for 1 min. The vertical load is uniformly applied along a 127mm (5 in.) length at the apparent weakest point. 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.</p>	<p>Pass</p>
<p>13 Arm Strength Test Horizontal –Static (Functional Load)</p>	<p>No loss of serviceability when 445N (100lbs.) for 1 min. is applied horizontally outward to the armrest at the most forward point of the armrest</p>	<p>Pass</p>
<p>13 Arm Strength Test Horizontal - Static (Proof Load)</p>	<p>No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 667N (150lbs.) for 1 min. is applied horizontally outward to the armrest at the most forward point of the armrest.</p>	<p>Pass</p>

<p>14 Backrest Durability Test – Cyclic –Type I</p>	<p>Note: This test does not apply to chairs with backrest height less than 200 mm (7.9 in.). No loss of serviceability in 120,000 cycles with a 109kg (240lbs.) in the center of the seat and a 445N (100lbf.) 90° to the center of the chair back. For chairs with a back width greater than 406mm (16in.), test at the center of chair back for 80,000cycles and then 102mm (4in.) off-center 40,000 cycles, half to each side.</p>	<p>Pass</p>
<p>15 Backrest Durability Test – Cyclic –Type II & III</p>	<p>Note: This test does not apply to chairs with backrest height less than 200 mm (7.9 in.). No loss of serviceability in 120,000 cycles with a 109kg (240lbs.) in the center of the seat and a 334N (75lbf.) 90° to the center of the chair back. For chairs with a back width greater than 406mm (16in.), test at the center of chair back for 80,000cycles and then 102mm (4in.) off-center 40,000 cycles, half to each side.</p>	<p>N/A</p>
<p>16 Caster / Chair Base Durability Test-Cyclic- Caster / Chair Base Durability Test for Pedestal Base Chairs</p>	<p>If a complete chair is to be tested, place a 122 kg (270 lb.) load on the seat of the chair. If a fixture is used, the weight of the test assembly (base assembly, fixture and weights) shall be equivalent to 122kg (270 lb.) plus the weight of the chair in its fully assembled configuration. (See Figure 17c). The base and casters shall be free to rotate and swivel. 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 113kg (250lbs.) load on the seat. Test stroke is 762mm (30in.) minimum. The caster should not separate under 22N (5lbs.) pulling force in line with the caster stem after the cycling test and no loss of serviceability.</p>	<p>Pass</p>
<p>16.2 Caster / Chair Base Durability Test for Chairs with Legs</p>	<p>This test applies to chairs with legs and casters. This test is not applicable to chairs with glide/caster combinations (i.e., those having two glides and two 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 122kg (270lbs.) load on the seat. Test stroke is 762mm (30in.) minimum. The caster should not separate under 22N (5lbs.) pulling force in line with the caster stem after the cycling test.</p>	<p>N/A</p>
<p>17 Leg Strength Test -Front and Side Application (Functional Load)</p>	<p>No loss of serviceability when a force of 334N (75lbf.) is applied to each front leg individually for 1 minute.</p>	<p>N/A</p>
<p>17.3 Leg Strength Test- Front Load (Proof Load)</p>	<p>No sudden and major change in the structural integrity (loss of serviceability is acceptable) when a force of 503N (113lbf.) is applied to each front leg individually for 1 minute.</p>	<p>N/A</p>
<p>17.4 Side Load Tests (Functional Load)</p>	<p>No loss of serviceability when a force of 334N (75lbf.) is applied to each front leg individually for 1 minute.</p>	<p>N/A</p>
<p>17.4 Side Load Tests (Proof Load)</p>	<p>No sudden and major change in the structural integrity (loss of serviceability is acceptable) when a force of 503N (113lbf.) is applied once to the front and rear leg individually for 1 minute.</p>	<p>N/A</p>

<p>18 Footrest Static Load Test - Vertical (functional load)</p>	<p>The footrest static load test shall be performed on all chairs with a footrest feature and a seat height equal to or greater than (or can be adjusted to) 610 mm (24 in.).</p> <p>a) 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.(See Figure 18: Top View of Footrest). 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.</p> <p>b) If applicable, remove force F2.</p> <p>c) Increase the force F1 to 200 lbf. for one (1) minute.</p> <p>After test there shall be no loss of serviceability or sudden loss of footrest height.</p>	<p>N/A</p>
<p>18 Footrest Static Load Test – Vertical (Proof Load)</p>	<p>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.</p> <p>The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.</p>	<p>N/A</p>
<p>19 Footrest Durability Test-Vertical -Cyclic</p>	<p>The footrest durability test shall be performed on all chairs with a footrest feature.</p> <p>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. (See Figure 18: Top View of Footrest). 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 (See 20.5 Acceptance level). 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.</p> <p>No loss of serviceability after 50,000cycles test, and adjustable footrests that move more than 25 mm (1 in.) in the first 500 cycles shall be considered to have lost their serviceability.</p>	<p>N/A</p>
<p>20 Arm Durability Test- Cyclic</p>	<p>No structural breakage or loss of serviceability when a force of 400N (90lbf.) is applied to each arm at a 10° angle ±1° for 60,000cycles</p>	<p>Pass</p>
<p>21 Out Stop Tests for Chairs with Manually Adjustable Seat Depth</p>	<p>Place a 74 kg (163lb) rigid mass in the center of the seat. Hold the seat at its most position. A cable is attached to the most rigid point of the vertical centerline of the seat. Hang a weight of 25 kg (55 lb) on the opposite end of the cable. Release the weight so it can drag the seat move forward rapidly and impact</p> <p><i>Note: This test does not apply to chairs where seat depth adjustments must occur with the user out of the chair.</i></p>	<p>N/A</p>
<p>22 Tablet Arm Chair Static Load Test</p>	<p>Apply a load of 68 kg (150 lb) at the apparent weakest position for 5 minutes and remove the load. No sudden and major change in the chair when the application of the load.</p>	<p>N/A</p>

23 Tablet Arm Chair Load Ease Test - Cyclic	No loss of serviceability to the unit after loading the tablet surface with a weight of 25 kg (55 lb) for a total 100,000 cycles.	N/A
24 Structural Durability Test -Cyclic	No loss of serviceability to the unit after loading a weight of 109kg(240lb) 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 o 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 334N (75lbf) at an appropriate rate between 10 and 30 cycles per minute. The device shall be cycled for 25,000cycles.	N/A

Note:

N/A =Not applicable.

*** END OF THE REPORT ***