UL Verification Services (Guangzhou) Co., Ltd.
Building A1, 5F, Nansha Science and Technology Innovation Center, No.25, South Huanshi Avenue, Nansha District, Guangzhou 511458, P.R. China.

Requester:	Formway Design Studio
Contact Name:	Martyn Collings / MartynC@formwaydesign.com
Date(s) Tested:	07/13/2022 to 07/25/2022
Date Issued:	07/26/2022
Sample(s) Submission Date:	07/13/2022
Technician(s):	Dash Li, Ruby Du
UL Order / Project Number:	14388412 / 4790464598

Scope: To evaluate Lightly Chair , by subjecting it to the following tests:

Requested Tests:

Test Name	Requirement
Backrest Strength Test – Static Type III	ANSI/BIFMA X5.1-2017(R2022), Section 6
Drop Test – Dynamic	ANSI/BIFMA X5.1-2017(R2022), Section 7
Seating Durability Tests – Cyclic	ANSI/BIFMA X5.1-2017(R2022), Section 10
Stability Tests	ANSI/BIFMA X5.1-2017(R2022), Section 11
Backrest Durability Test – Cyclic – Type II & III	ANSI/BIFMA X5.1-2017(R2022), Section 15
Leg Strength Test – Front and Side Application	ANSI/BIFMA X5.1-2017(R2022), Section 17
Structural Durability Test – Cyclic	ANSI/BIFMA X5.1-2017(R2022), Section 24

Product Description:

Specimen	Description	Condition	Supplier
5096110	Complete Product	New	Formway Design Studio
5096113	Complete Product	New	Formway Design Studio
5096114	Complete Product	New	Formway Design Studio

Summary:

Test Name	Specimen	Results
Backrest Strength Test – Static Type III	5096113	Met Requirement
Drop Test – Dynamic	5096114	Met Requirement
Seating Durability Tests – Cyclic	5096113	Met Requirement
Stability Tests	5096110	Met Requirement
Backrest Durability Test – Cyclic – Type II & III	5096114	Met Requirement
Leg Strength Test – Front and Side Application	5096110	Met Requirement
Structural Durability Test – Cyclic	5096110	Met Requirement

Test Results:

1. Backrest Strength Test - Static - Type III:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 6.

Notes:

- Temperature / Humidity: 24.8℃ & 64% R.H.
- Functional load: 150 lbf. applied at 90° to the plane of the back at its back stop position for 1 minute.
- Proof load: 225 lbf. applied at 90° to the plane of the back at its back stop position for 1 minute.
- See Photo 1 for setup.

Photo 1

Specimen	Load (lbf.)	Time (sec.)	Observations
5096113	150	60	No loss of serviceability.
	225	60	No sudden and major changes.

Requirement:
Functional Load: There shall be no loss of serviceability to the chair.
Proof Load: There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.

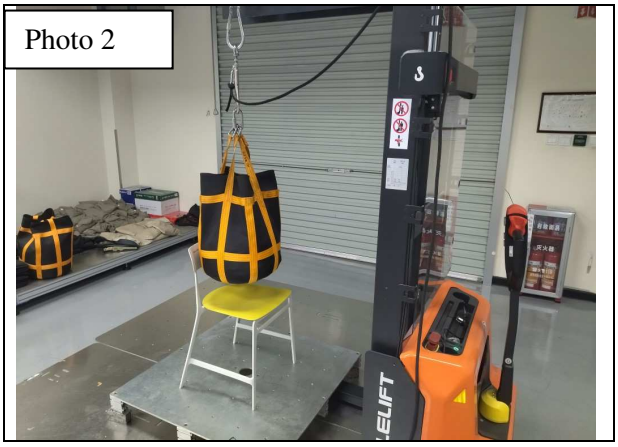
2. Drop Test – Dynamic:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 7.

Notes:

- Temperature / Humidity: 24.8℃ & 64% R.H.
- Functional load: 225 lbs.
- Proof load: 300 lbs.
- Load dropped from a height of 6 in. through a 16 in. diameter bag.
- See Photo 2 for setup.

Photo 2



Specimen	Chair Height	Load (lbs.)	Observations
5096114	Fixed	225	No loss of serviceability.
		300	No sudden and major change in structural integrity.

Requirement:
Functional Load: There shall be no loss of serviceability to the chair.
Proof Load: There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.

3. Seating Durability Tests – Cyclic:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 10.

Notes:

- Temperature / Humidity: 24.8℃~25.2℃ & 58%~66% R.H.
- A 125 lbs. load was dropped from 1.4 inches above uncompressed seat surface through a 16 inches diameter bag.
- The bag was centered from side to side and 0.5 in. forward of the front of the backrest.
- Following the impact segment an alternating 200 lbf. load was applied through 8 in. loading pads 20,000 times to each front corner of the seat.
- Impact test rate: 20 CPM.
- Load Ease test rate: 20 CPM.
- See Photos 3 (Drop Impact) and 4 (Load Ease) for setups.

Photo 3

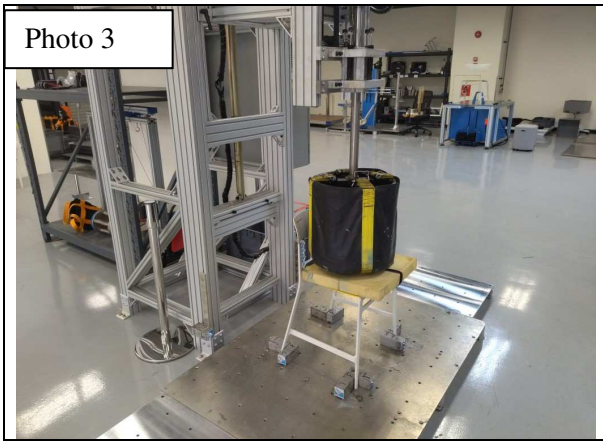
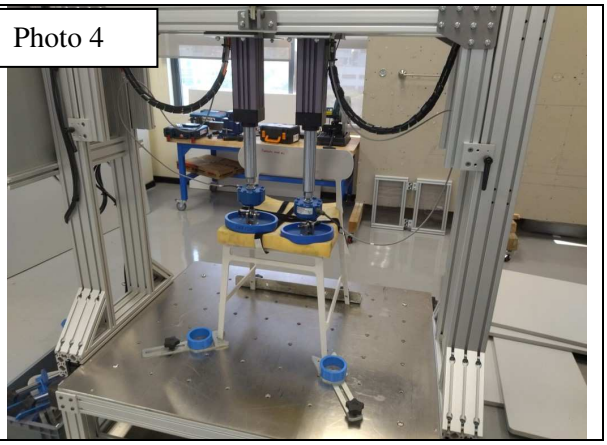


Photo 4



Specimen	Segment	Cycles	Observations
5096113	Impact	0	Test begun.
		100,000	No loss of serviceability.
	Load Ease	0	Test begun.
		20,000	No loss of serviceability.

Requirement:
There shall be no loss of serviceability to the chair after the completion of both the impact and load-ease tests.

4. Stability Tests:

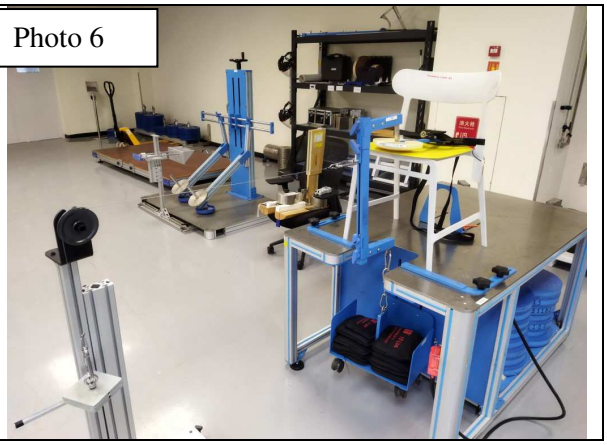
Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 11.

Notes:

- Temperature / Humidity: 24.4℃ & 62% R.H.
- Type III rear stability performed with 6 discs in seat with force applied to the front of the top disc.
- Type III rear stability force calculation: 1.1 x (47- 18.1) = 31.8 lbf.
- See Photos 5 (Rear Stability) and 6 (Front Stability) for setups.

Photo 5

Photo 6



Specimen	Test	Observations
5096110	Rear Stability	Type III: Product met the 31.8 lbf. Minimum, unit tipped at 49.6 lbf.
	Front Stability	Product met the 4.5 lbf. Minimum, unit tipped at 17.2 lbf.

Requirement:
Rear Stability: The chair shall not tip over.
Front Stability: The chair shall not tip over as a result of the (4.5 lbf) force application.

5. Backrest Durability Test - Cyclic - Type II and III:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 15.

Notes:

- Temperature / Humidity: 24.8℃~25.2℃ & 58%~66% R.H.
- 240 lbs. load centered in the seat.
- 75 lbf. force applied at 90° to the plane of the back at its back stop position once per cycle.
- 80,000 cycles at the center of the back, 20,000 cycles 4 in. left of center and 20,000 cycles 4 in. right of center.
- Test rate: 20 CPM.
- See Photo 7 for setup.

Photo 7

Specimen	Segment	Cycles	Observations
5096114	Center	0	Test begun
		80,000	No loss of serviceability
	4 in. Left	80,001	Test continued
		100,000	No loss of serviceability
	4 in. Right	100,001	Test continued
		120,000	No loss of serviceability.

Requirement:
There shall be no loss of serviceability.

6. Leg Strength Test – Front and Side Application:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 17.

Notes:

- Temperature / Humidity: 25.2℃ & 60% R.H.
- Functional loads: Front and side application = 75 lbf.
- Proof loads: Front and side application = 113 lbf.
- See Photos 8~10 for setups.

Photo 8

Photo 9

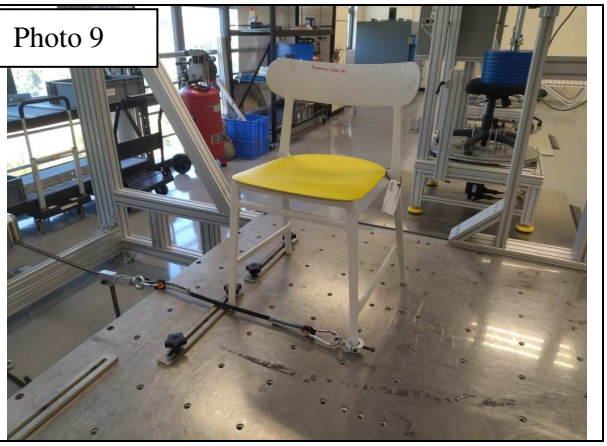
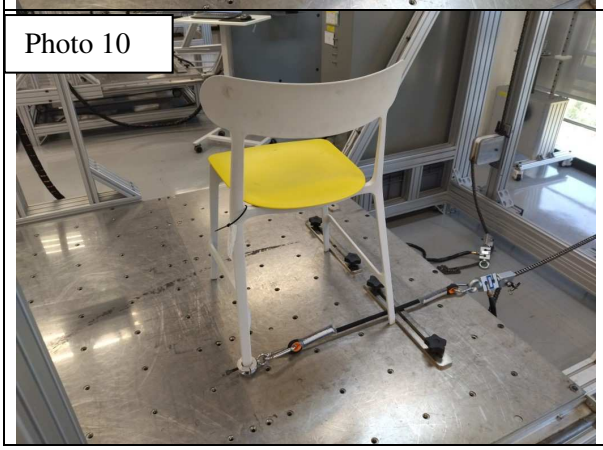


Photo 10



6. Leg Strength Test – Front and Side Application(continued):

Specimen	Load (lbf.)	Time (sec.)	Direction	Observations
5096110	75	60	Front/LF	No loss of serviceability.
	75	60	Side/LF	No loss of serviceability.
	75	60	Side/LR	No loss of serviceability.
	113	60	Side/LR	No sudden and major change in structural integrity.
	113	60	Side/LF	No sudden and major change in structural integrity.
	113	60	Front/LF	No sudden and major change in structural integrity.

Requirement:

Functional Load: Functional load(s) applied once in each direction shall cause no loss of serviceability.

Proof Load: Proof load(s) applied once in each direction shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.

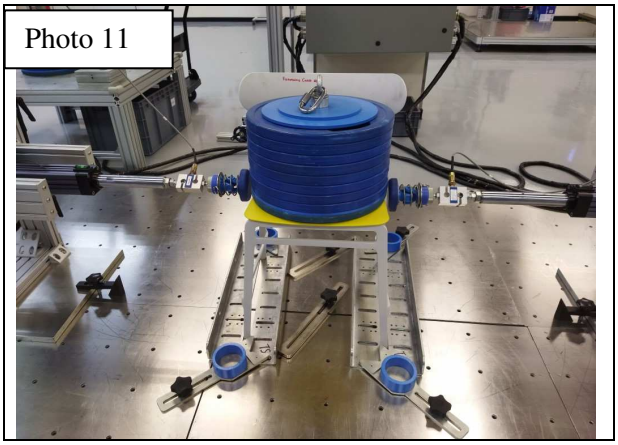
7. Structural Durability Test – Cyclic:

Testing was performed per ANSI/BIFMA X5.1-2017(R2022), Section 24.

Notes:

- Temperature / Humidity: 24.8℃~25.2℃ & 58%~66% R.H.
- Seat load: 240 lbs. located at seat center.
- A 75 lbf. load was applied at unit frame midway between front and rear on alternatingly on both sides.
- Test rate: 20 CPM.
- See Photo 11 for setup.

Photo 11



Specimen	Cycles	Observations
5096110	0	Test begun.
	25,000	No loss of serviceability.

Requirement:
There shall be no loss of serviceability to the unit.

Revision History:

Version	Rev. Date	Change Control Comments	Approver
1.0	07/26/2022	Created document.	Waley Huang