TEST REPORT

UL 507

Standard For Safety of Electric Fans

Job Number. ..... :	XK2301012108S
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Date of issue ..... :	February 03, 2023
Total number of pages..... :	80 pages
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Manufacturer's name ..... :	**Shenzhen Gaiatop Network Technology Co., Ltd.**
Address ..... :	QixingCreativityIndustrialYard, TaoyuanShequDalangStreet, LonghuaDistrict, Shenzhen, Guangdong, China.
Test specification:	
Standard ..... :	UL 507 Issued: Edition 10, November 09, 2017, Rev: May 27, 2020
Test procedure..... :	UL test report
Non-standard test method.....	N/A
Test Report Form No. ..... :	UL507_2020
Test Report Form(s) Originator .... :	SiCT
Master TRF ..... :	Dated 2020-10
Test item description..... :	Desktop Fan
Trade Mark..... :	GAIATOP
Model/Type reference..... :	TF55
Ratings..... :	DC5V, 2A

Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement .....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item.....:	January 30, 2023
Date (s) of performance of tests.....:	January 30, 2023 - February 03, 2023

General product information:

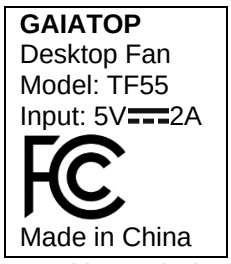
The product covered in this report is a Desktop Fan, it intended to indoor use, which is supplied from DC5V.

Relevant Technical consideration：

-Maximum ambient temperature: 25°C.

- All the test were performed on model TF55, and found to comply with the standard was subjected to all the tests.

Copy of marking plate:



Marking Label

Notes:

1. - The above markings are the minimum requirements required by the safety standard as a reference marking label. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

TEST LIST SUMMARY - UL 507

Clause	Performance	Required	Comply
41	Leakage Current Test	N/A	N/A
42	Continuity of Grounding Circuit Test	N/A	N/A
43	Limited Short-Circuit Test	N/A	N/A
44	Starting Current Test	N/A	N/A
45	Input Test	N/A	N/A
46	Temperature Test	N/A	N/A
47	Dielectric Voltage Withstand Test	N/A	N/A
48	Water Spray Test	N/A	N/A
49	Hosedown Test	N/A	N/A
50	Locked Rotor Test	N/A	N/A
53	Humidity Conditioning Test	N/A	N/A
54	Strain Relief Test	N/A	N/A
55	Interconnecting Cords and Leads	N/A	N/A
56	Unguarded Impeller Tests	N/A	N/A
57	Push Back Relief Test	N/A	N/A
58	Oscillating Fan Test	N/A	N/A
59	Tests of Switches and Controls	N/A	N/A
60	Static Load Test For Mounting Means	N/A	N/A
61	Impact Test on Guards	N/A	N/A
62	Static Force Test on Guards	N/A	N/A
63	Impeller Test for Portable Fans	N/A	N/A
64	Impeller Ignition Test	N/A	N/A
65	Component Breakdown Test	Y	P
66	Fuseholder Cover Test	N/A	N/A
67	Tests for General Purpose Transformers	N/A	N/A
68	Thermal Aging Test	N/A	N/A
69	Permanence of Marking Tests	N/A	N/A
70	Drop Test	N/A	N/A
71	Security of Handle Test	N/A	N/A
72	Stability Test	N/A	N/A
73	Hassock Fan Load Test	N/A	N/A
74	Installation Test	N/A	N/A
87.1	Temperature test	N/A	N/A
87.2	Abnormal operation test	N/A	N/A
91.1	Static Load Test	N/A	N/A
91.2.2	Temperature condition test	N/A	N/A
91.2.3	Endurance test	N/A	N/A
91.3	Polymeric blades	N/A	N/A

Clause	Performance	Required	Comply
91.4.1	Static load test for ceiling-suspended fan blade brackets	N/A	N/A
91.4.2	Dynamic load test for ceiling-suspended fan blade	N/A	N/A
99.1	Polymeric blades	N/A	N/A
114.2	Temperature test for rangehoods	N/A	N/A
114.3	Grease conditioning	N/A	N/A
114.4	Oven and humidify conditioning	N/A	N/A
114.5	Grease and humidity conditioning	N/A	N/A
114.9	Glass impact test	N/A	N/A
144.1	Normal temperature test	N/A	N/A
144.2	Abnormal test	N/A	N/A
160.1	Input test	N/A	N/A
160.2	Temperature test	N/A	N/A
160.3	Moisture resistance test	N/A	N/A
160.4	Stability test	N/A	N/A
160.5	Ultraviolet light and water exposure	N/A	N/A
160.6	Overflow test	N/A	N/A
160.7	Spill test	N/A	N/A
160.8	Static loading test	N/A	N/A
191.2	Input Test	N/A	N/A
191.3	Temperature Test	N/A	N/A
191.4	Dielectric Voltage Withstand Test	N/A	N/A
191.5	Abnormal Operation Locked Rotor Test	N/A	N/A
218.2	Charging input/output test	Y	P
218.3	Input test	Y	P
218.4	Temperature test	Y	P
218.5	Charger temperature test	N/A	N/A
218.6	Dielectric voltage withstand test	Y	P
218.7	Enclosure impact test	Y	P
218.8	Drop test	Y	P
218.9	Locked rotor test	Y	P
218.10	Abnormal operation	Y	P
218.11	Battery venting test	N/A	N/A
223.2	Ultraviolet radiation test	N/A	N/A

Remark: Y-Yes; N-No; N/A-Not Applicable; P-Pass; F-Fail

Clause 41 **Leakage Current Test** **N/A**

Method(s):

One as received sample was placed on an insulated surface and was connected to a ___ V, ___ Hz source of supply. Leakage currents to earth ground were measured from all exposed conductive surface of the unit by a meter having an input impedance of 1500Ω resistive shunted by a capacitance of 0.15μF. For a polymeric material or conductive surface other than metal, the leakage current was measured using a metal foil with an area of 100 x 200 mm in contact with the surface. If the surface was less than 100 x 200 mm, the metal foil was the same size as the surface. The foil did not remain in place long enough to affect the temperature of the products.

The measurement circuit for leakage current was as illustrated in Figure 41.1.

The test sequence was as follows:

a) With switch S1 open, the appliance was connected to the measuring circuit. Leakage current was measured using both position of switch S2.

b) Switch S1 was then closed, energizing the appliance, and within 5 second, the leakage current was measured using both position of switch S2.

c) Leakage current was monitor until thermal stabilization under both position of switch S2 was used.

Result(s):

The leakage current of a cord-connected product rated 240 V or less was not more than: True __ False __.

a) 0.5 milliampere for an ungrounded 2-wire product;

b) 0.5 milliampere for a grounded, 3-wire, portable product; and

c) 0.75 milliampere for a grounded, 3-wire, product:

1) Employing a standard attachment plug rated 20 amperes or less; and

2) Intended to be fastened in place or located in a dedicated space.

Note(s):

Condition	S1	S2	Measured max. leakage current (mA)	Limit current (mA)
a. - Unit ON	OFF OFF	P1 P2		
b. - Unit ON (0 - 5 seconds)	ON ON	P1 P2		
c. - Unit ON (Thermal stabilization)	ON ON	P1 P2		

Clause 42 **Continuity of Grounding Circuit Test** **N/A**

Method(s):
The resistance was determined by any convenient method. When unacceptable results were obtained, either a direct or alternating current equal to the current rating of the maximum-current-rated branch-circuit overcurrent-protective device that was employed with the appliance was passed from the equipment grounding terminal or the point of attachment of the wiring system to the dead metal part, and the resulting drop in potential was measured between these two points. The resistance in ohms was determined by dividing the drop in potential in volts by the current in amperes passing between the two points.

Result(s):
The resistance was not more than 0.1 ohm between any point required to be grounded and True __ False __.

[ ] For an appliance intended for permanent electrical connection, the point on the enclosure at which the power-supply system was connected.

[ ] For a cord-connected appliance employing a grounding conductor in the cord, the point to which the grounding conductor of the power-supply cord was connected.

Note(s):
The resistance was ___ohm(s)

Clause 43 **Limited Short-Circuit Test** **N/A**

Method(s):
Three samples of the enclosure/conduit construction are to be subjected to the test. The test circuit is to have a power factor of 0.9 – 1.0 and is to be limited to the current specified in below Table.

Circuit capacity for short circuit test

Nominal Voltage	Equipment Full Load Amperes, Single Phase 120	208	240	277	Circuit Capacity, Amperes
	0-9.8	0-5.4	0-4.9	–	200
	9.9-16	5.5-8.8	5.0-8.0	0-6.5	1000

The open-circuit voltage of the test circuit is to be 100 – 105 percent of the rated voltage of the equipment.

The enclosure is to be connected to the circuit through appropriately sized 6 inch-length of flexible metal conduit and a ground terminal suitable for connection of 3/0 AWG copper conductors is to be installed as close as possible to the internal conduit locknut. The free ends of each 4 foot-length of 3/0 AWG copper conductor are connected to each the supply as described in 43.2 through a series connected nonrenewable fuse that does not open in less than 12 seconds when carrying twice its rated current.

Test Voltage: _____V; Test Current: ____A.

Result(s):
The knockout construction still maintains its integrity, and no melting or otherwise opening of the knockout connection during the test. True __ False __.

Note(s):

Clause 44 **Starting Current Test** **N/A**

Method(s):

The appliance was connected to a power-supply circuit protected by a fuse. The appliance was at room temperature at the beginning of the test. The appliance was started three times without tripping an overload protector provided as part of the appliance, or opening the fuse protecting the supply circuit. Each start of the appliance was made under conditions representing the beginning of normal operation – the beginning of the normal operating cycle in the case of an automatic appliance. The motor of the appliance was allowed to come to full speed after each start, and to come to rest between successive starts. An appliance employing a general use receptacle was loaded to the marked rating of the receptacle outlet.

Remark:

The fuse mentioned above was other than a time-delay type. The current rating of the fuse was equal to the current rating of the supply circuit of the lowest rating to which the appliance intended to be connected.

Exception: A time-delay fuse was employed if the appliance is marked “If connected to a circuit protected by fuses, use time-delay fuses with this appliance,” or with an equivalent wording and:

a) The construction of the appliance or the nature of its usage was such that it was used continually on the same branch circuit after installation – for example, a window fan, an attic ventilator, or the like; or

b) The appliance was of the household type that was used on a 15- or 20- ampere branch circuit.

Result(s):

The appliance started and operated normally without: True __ False __.

a) Tripping an overload protector provided as part of the appliance; or

b) Opening the fuse, when connected to a circuit protected by a fuse.

Note(s):

[ ] The no-time-delay fuse was __ A.

[ ] The time-delay fuse was __ A.

Clause 45 **Input Test** **N/A**

Method(s):
The appliance was operated under conditions of intended service, when connected to a power-supply circuit of maximum rated voltage and rated frequency.

Result(s):
The current input to an appliance was not more than 110 percent of the rated value. True __ False __.

Supply Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	Marked Rating (A/W)	Limit (A/W)

Note(s):

Clause 46 **Temperature Test** **N/A**

Test conditions:

All products:

The sample was connected to a DC5 volt, / Hz supply and operated under each condition of normal service. If the sample employing a general use receptacle was loaded to the marked rating of the receptacle. The maximum length of the supply cord was used for the Temperature Test. Using thermocouples and a hybrid recorder to record temperatures. The test was continued until temperatures have become constant. If the test was conducted at an ambient temperature other than 27°C (77°F), an observed temperature was corrected.

[X] Fans for use over an eye-level range oven

The appliance mounted above a heat source as described in 46.2.2 and illustrated in Figure 46.1, in accordance with the manufacturer's instructions. The test was conducted with the appliance and heat source in a 2-sided-right side and rear-alcove of 9.525-mm (3/8-inch) thick plywood. The sides of the alcove were painted black and are to extend at least 609.6 mm (2 feet) beyond the outermost edges of the assembly. The appliance and heat source were as close to the side and back of the alcove as their configuration permits. The test was conducted first with the fan on and with only the bake element energized with the thermostat set to give a temperature of 246°C (475°F) with the door of the heat source closed. The test was then repeated with the heat source set for broiling and the door open 101.60 mm (4 inches). Both of these tests were then to be repeated with the fan off.

[X] Controllers

For the temperature test, a separate controller – that was, a controller that was not a physical part of the appliance – that was intended for installation in a wall was mounted as follows. The controller was secured inside its own enclosure, if provided. Otherwise, it was installed inside the smallest standard flush-type outlet box that accommodates it, and the box was mounted in a simulated wall section as illustrated in Figure 46.2.

Result(s):

During the test, the appliance did not: True X False __.

a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire;

b) cause deterioration of any materials employed in the appliance; or

c) have constant temperature at specific points more than those specified in standard.

True X False __.

[X] The thermal protective device did not operate during the temperature test.

Clause 46 Normal Temperature Tests **N/A**

Input: DC5 V, / Hz, 0.74 A, / W

Load: _____ Ambient Temp.: 25 ºC

Thermocouple method

Ch.	Components (or Locations)	Temp. (ºC)	Correct Temp. (ºC)	Limit Temp. (ºC)

Resistance-change Method

Components	R1 (Ω)	T1 (ºC)	R2 (Ω)	T2 (ºC)	Temp (ºC)	Correct Temp (ºC)	Limited Temp (ºC)

Clause 47 **Dielectric Voltage Withstand Test** **N/A**

Method(s):

The dielectric potential was applied between the points indicated below. For the test, the sample was at its maximum normal operating temperature and all switches were set so that all circuits were energized. In each case, the test potential was gradually achieved starting from zero and held at the indicated value for a period of one minutes.

The test potential was 500 VAC (Choice: 1000 V/1000 V plus twice the rated voltage/500 V), 60 Hz or VDC (Choice: 1400 V/1400 V plus 2.8 times the rated voltage/700 V) between:

[X] Uninsulated live metal parts and the enclosure. A non-conductive enclosure was wrapped in conductive foil.

[ ] Terminals of opposite polarity.

[ ] Uninsulated live metal parts and accessible dead metal parts.

[ ] Uninsulated live metal parts and grounding contacts of grounding type receptacles.

[ ] Primary and isolated secondary circuits.

[ ] For the capacitors which connected across-the-line or line-to-ground. The test potential was __ VDC (1414 V plus 2.828 times the maximum rated supply voltage) between the terminals of the capacitor, and between the terminals and foil wrapped around the case of the capacitor. The test was conducted with the capacitor at normal operating temperature.

[ ] For reversible shaded-pole motor. The test potential was___V (Choice: 1000 V/1000 V plus twice the rated voltage / 500 V), 60 Hz between the stator winding and the shading coils, the shading coils and the stator core.

Result(s):

In each case, there was no breakdown or arc-over. True X False __.

Clause 48 **Water Spray Test** **N/A**

Method(s):
Refer to standard

Result(s):
There was no wetting of uninsulated live parts or film coated wire – other than motor windings – and no accumulation of water in the wiring compartment or channel. True __ False __.
[ ] 120 volt cord-connected appliances

Condition	S1	S2	Measured maximum leakage current (mA)	Limit current (mA)
During exposure to the water spray	OFF / ON OFF / ON	P1 P2		2.5
Immediately upon cessation of the water spray	OFF OFF	P1 P2		2.5

There was no breakdown or arc-over of the appliance in the dielectric-voltage withstand test. True __ False __.

[ ] Other than 120 volt cord connected appliances
The insulation resistance was more than 50,000 ohms. True __ False __.
There was no breakdown or arc-over of the appliance in the dielectric-voltage withstand test. True __ False __.

Note(s):
[ ] The insulation resistance was __ ohms.

Clause 49 **Hosedown Test** **N/A**

Method(s):

The enclosure and its external mechanisms were sprayed by water from a hose having a 25.4-mm (1-inch) inside diameter nozzle that delivers at least 246 L (65 gallons) of water per minute. The water stream was directed at the fan from a distance of 3 – 3.7 m (10 – 12 feet) and was moved along the enclosure or surface at a minimum rate of 1.6 cm/sec (4 inches per second).

[ ] For an enclosure having a test length – height plus width plus depth dimension – of 1.9 m (75 inches) or less, the duration of the water stream contact with the enclosure was 5 minutes.

[ ] For an enclosure having a test length exceeding 1.9 m (75 inches), the duration of water stream contact in minutes was 2.6 times the test length measured in meters (the test length measured in inches divided by 15).

Result(s):

There was no standing water inside the enclosure. True __ False __.

There was no water on uninsulated live parts or on film-coated wire, other than motor windings. True __ False __.

Note(s):

Clause 50 **Locked Rotor Test** **N/A**

Method(s):
The fan was installed or placed in its intended position with the rotor of the fan motor locked and energized as described in the Locked-Rotor or No-Load Temperature Test in the Standard for Impedance Protected Motors, UL 1004-2. The temperature was determined after thermal equilibrium was attained.

Result(s):
The temperature of motor did not exceed the requirements in the Standard for Impedance Protected Motors, UL 1004-2 True _X_ False __.

Note(s):
Actual temperature _56.3_ °C.
Limit temperature _150_ °C.

This test did not need if the motor was conducted the test of UL 1004-2.

Clause 53 Humidity Conditioning Test N/A

Method(s):

A sample of the appliance was heated to a temperature just above 34°C (93°F) to reduce the likelihood of condensation of moisture during conditioning. The heated sample was then placed in the humidity chamber and conditioned for 48 hours in air having a relative humidity of 88 ± 2 percent and a temperature of 32±2°C (90 ±4°F).

Following the conditioning:

[ ] A cord-connected appliance rated for a nominal 240-volt supply or less

The Leakage Current Test was conducted.

The Dielectric Voltage Withstand Test was conducted.

[ ] Other than a cord-connected appliance rated for a nominal 240-volt supply or less

The insulation resistance between live parts and exposed dead metal parts was tested.

The Dielectric Voltage Withstand Test was conducted.

Result(s):

[ ] A cord-connected appliance rated for a nominal 240-volt supply or less True __ False __.

The leakage current was not more than:

a) 0.5 milliampere for an ungrounded 2-wire product;

b) 0.5 milliampere for a grounded, 3-wire, portable product; and

c) 0.75 milliampere for a grounded, 3-wire, product:

1) Employing a standard attachment plug rated 20 amperes or less; and

2) Intended to be fastened in place or located in a dedicated space.

There was no breakdown or arc-over.

[ ] Other than a cord-connected appliance rated for a nominal 240-volt supply or less

The insulation resistance was 50,000 ohms or more. True __ False __.

There was no breakdown or arc-over. True __ False __.

Note(s):

[ ] The leakage current was __ mA.

[ ] The insulation resistance was __ ohms.

Clause 54 **Strain Relief Test** **N/A**

Method(s):

[ ] Flexible Cord

A flexible cord withstood for 1 minute a direct pull of 155.68 N (35 pounds) applied to the cord with the connections within the appliance disconnected. A 16-kg (35-pound) weight was suspended from the cord and supported by the appliance so that the strain-relief means was stressed from any angle.

A flexible cord withstood for 1 minute a torque as shown in table below in either direction between the cord and the enclosure with the connections within the appliance disconnected.

Weight of appliance, W kg (pounds)	Torque N•m	
W < 1.0 (2.2)	0.10	[ ]
1.0 (2.2) ≤ W ≤ 4.0 (8.8)	0.25	[ ]
W > 4.0 (8.8)	0.35	[ ]

[ ] Through Cord Switch

A through cord switch withstood for 1 minute a direct pull of 133.44 N (30 pounds).

[ ] A metal strain-relief clamp or metal band is used on Type SP-2 or lighter rubber-insulated cord or SPT-1, SPT-2, SVT, or SVTO cord that is protected by varnished cloth tubing or the equivalent under the clamp. Six samples of the clamp that were secured to the cord in the intended manner were used. Three samples were subjected to the Dielectric Voltage Withstand Test, and conducted strain-relief test specified above as-received condition. Three samples were conducted strain-relief test specified above after being subjected to the following procedures:

a) The samples were placed for 168 hours in a forced-draft air-circulating oven maintained at a temperature of 70°C or 10°C higher than the temperature recorded on the clamp during the Temperature Test, whichever is greater.

b) The samples were subjected to the Dielectric Voltage Withstand Test, with the value of the applied potential based on the rating of the appliance. The potential was applied between conductors, and also applied between the clamp and all conductors spliced together.

c) The conditioned samples were then cooled at room temperature.

Result(s):

[ ] Flexible Cord: There was no movement of the cord as to indicate that stress on the connections had resulted. True __ False __.

[ ] Through Cord Switch: There was no conductor that was detached from a terminal or an uninsulated conductor of the cord was exposed. True __ False __.

[ ] The appliance complied with the Dielectric Voltage Withstand Test and the strain-relief test. True __ False __.

Note(s):

[ ] Oven temperature was __ °C.

[ ] Product weight 0.46 Kg.

Clause 55 Interconnecting Cords and Leads N/A

Method(s):

Interconnecting cords or leads withstood for 1 minute a direct pull of 89 N (20 pounds) applied to the cord with the connections within the appliance disconnected. A 9-kg (20-pound) weight was suspended from the cord and supported by the appliance so that the strain-relief means was stressed from any angle.

Interconnecting cords or leads withstood for 1 minute a torque as shown in table below in either direction between the cord and the enclosure with the connections within the appliance disconnected.

Weight of appliance, W kg (pounds)	Torque N•m	
W < 1.0 (2.2)	0.10	[ ]
1.0 (2.2) ≤ W ≤ 4.0 (8.8)	0.25	[ ]
W > 4.0 (8.8)	0.35	[ ]

Result(s):

There was no movement of the cord as to indicate that stress on the connections had resulted. True __ False __.

Note(s):

Clause 56 **Unguarded Impeller Tests** **N/A**

Method(s):

A portable fan operated for 1 hour connected to a supply voltage of 130 percent of the rated supply voltage. The test was conducted before and after conditioning as described below. An impeller was placed in an air-circulating oven maintained at 70°C (158°F) for 7 hours. After removal, it was tested as described in Section 56, Unguarded Impeller Tests; Section 61, Impact Test on Guards; and Section 70, Drop Test.

The fan was fixed in place and energized so that the impeller rotated at intended speed. A 3.2 mm (1/8 inch) diameter dry hardwood dowel was supported on a stable, stationary flat surface perpendicular to the plane of rotation. The surface was to have a straight edge located approximately 9.5 mm (3/8 inch) from the fan blade. The dowel was suddenly thrust and retained by hand along an axis perpendicular to the plane of impeller rotation into the blade. This procedure was repeated at different points on the impeller (blade and hub) with the impeller rotating at all intended speeds and from in front of and behind the impeller in order to include the most severe condition.

Result(s):

The impeller did not break, crack, or chip.	True __ False __.
The motor-driven impeller was energy absorbent to the extent that the dry hardwood dowel did not break.	True __ False __.
After removal, the fan complied with Section 56, Unguarded Impeller Tests; Section 61, Impact Test on Guards; and Section 70, Drop Test.	True __ False __.

Note(s):

130 percent of the rated supply voltage was __ V, __ Hz.

Clause 57 **Push Back Relief Test** **N/A**

Method(s):

The supply cord or lead was held 25 mm (1 inch) from the point where the cord or lead emerges from the product and then pushed back into the product. When a removable bushing extends further than 25 mm (1 inch) is present, it was removed prior to the test. When the bushing is an integral part of the cord, the test was to be carried out by holding the bushing. The cord or lead was pushed back into the product in 25-mm (1-inch) increments until the cord buckles or the force to push the cord into the product exceeds 27 N (6 pounds-force).

Result(s):

There was no mechanical damage to the supply cord or lead.	True __ False __.
There was no exposure of the supply cord or lead to a temperature higher than that for which it is rated.	True __ False __.
There was no reduction of spacings below the minimum required values.	True __ False __.
There was no damage to internal connections or components.	True __ False __.

Note(s):

Clause 58 **Oscillating Fan Test** **N/A**

Method(s):

Six samples were subjected to this test. Throughout the test, the appliance was continuously energized at maximum rated input. The movable member was operated so that it would reach the limits of travel in both directions during each cycle by either the integral automatic mechanical feature of the appliance or by a external mechanical arrangement that operates the movable member. The cycling rate was one of the following:

[ ] 12 cycles per minute;

[ ] The rate at which the automatic mechanical feature operates, if the rate is less than 12 cycles per minute;

[ ] Greater than 12 cycles per minute using the external mechanical arrangement, if agreeable to all concerned, or as controlled by the integral automatic mechanical feature.

For an oscillating fan with a tilting head assembly, two samples were oriented in the head fully forward position, two were oriented in the head straight up position, and two were oriented in the head fully back position.

[ ] 750,000 cycles of operation for an appliance in which the movement of the power-supply cord, electrical wiring, or other insulated live parts occurs as a result of the operation of an automatic mechanical feature.

[ ] 6000 cycles of operation for an appliance in which the movement of the power-supply cord, electrical wiring or other insulated live parts only as a result of the operation of a manual feature.

After oscillating operation, the samples were conducted the Dielectric Voltage Withstand Test.

Result(s):

There was no electrical malfunction of the appliance.	True __ False __.
There was no exposure of an uninsulated conductor strand either within or outside of the enclosure.	True __ False __.
The appliance complies with the Dielectric Voltage Withstand Test.	True __ False __.
There was no breakage of more than 10 percent of the strands of any conductor strands (Details, refer to Note).	True __ False __.
There was no sign of oscillation cord or wire insulation abrasion.	True __ False __.

Note(s):

For each conductor:

Conductor 1: Total strands _____ ; Broken strands: _____.

Conductor 2: Total strands _____ ; Broken strands: _____.

Conductor 3: Total strands _____ ; Broken strands: _____.

Conductor 4: Total strands _____ ; Broken strands: _____.

Conductor 5: Total strands _____ ; Broken strands: _____.

Clause 59 **Tests of Switches and Controls** **N/A**

Method(s):

[ ] **Overload**

The appliance was connected to a grounded supply circuit of rated frequency and maximum rated voltage, with the rotor of the motor locked in position. During the test, exposed dead metal parts of the appliance were connected to ground through a 3 A plug fuse, and the connection was such that any single-pole, current-rupturing device was connected in the ungrounded conductor of the supply circuit. If the appliance was intended for use on direct current, or on direct current as well as on alternating current, the exposed dead metal parts were connected so as to be positive with respect to a single-pole, current-rupturing control device. The device was operated at a maximum rate of 10 cycles per minute, except that a faster rate of operation was employed only when agreeable to all concerned.

[ ] **Reversing**

The appliance was connected to a circuit of maximum rated voltage. Each cycle of operation was to consist of throwing the switch to the position in which the fan blades rotated in one direction, allowing the blades to come to full operating speed in that direction, then – without paused in any intermediate “off” position unless the switch did not function otherwise – throwing the switch to the position in which the rotation of the blades was reversed, allowing the rotation to attain normal operating speed in that direction, and then reversing the direction of rotation again by throwing the switch to the initial “on” position. The test repeated 1000 cycles.

Result(s):

[ ] **Overload** True __ False __.

There was no electrical or mechanical breakdown of the device.

The fuse in the grounding connection did not open.

[ ] **Reversing** True __ False __.

The motor-reversing switch withstood a test consisting of 1000 cycles of operation.

There was no electrical or mechanical breakdown of the switch, nor pitting or burning of the contacts that impaired intended operation.

Note(s):

The rated frequency and maximum rated voltage was __ V, __ Hz.

Motor locked current ___ A

Clause 60 Static Load Test For Mounting Means N/A

Method(s):

The appliance was mounted in accordance with the installation instructions provided by the manufacturer on 3/8-inch-thick plasterboard (dry wall) on nominal 2 by 4-inch wood studs/joists spaced on 24 inch (609 mm) centers. The mounting parts were used as specified in the instructions, and the securing screws were located between the studs/joists and secured in the plasterboard.

Commercial/industrial products were mounted in accordance with the installation instructions provided by the manufacturer.

After installation, the appliance was subjected to a static load. The load was applied so as to transmit the maximum amount of stress to the mounting means and was increased during a 5 to 10 second interval, until a load equal to the weight of the product plus a force of 3 times the weight of the product, but not less than 10 pounds (45 N), was applied to the mounting system.

[ ] For other than Ceiling Insert Fan with tab type mounting means, the load was maintained for 1 minute. Then, the appliance was measured the insulation resistance between live and dead-metal parts, and conducted dielectric voltage withstand test 1 minute of a 60-hertz essentially sinusoidal potential of 1000 volts between live and dead-metal parts.

[ ] For Ceiling Insert Fan with tab type mounting means, during the installation, the tab mounting means was used and set up in accordance with the instructions; and the load was maintained for 5 minute. Then the displacement was measured 1 minutes after the test load has been removed.

Result(s):

[ ] For other than Ceiling Insert Fan with tab type mounting means,

The security of the attachment of the appliance to the wall was not adversely affected.	True __ False __.
There was no evidence of a risk of fire or electric shock.	True __ False __.
The insulation resistance between live and dead-metal parts was not less than 50,000 ohms.	True __ False __.
The appliance withstood for 1 minute without breakdown the application of a 60-hertz essentially sinusoidal potential of 1000 volts between live and dead-metal parts.	True __ False __.

[ ] For Ceiling Insert Fan with tab type mounting means,

The security of the attachment of the appliance to the wall was not adversely affected.	True __ False __.
The face of the product secured by the tab mounting means was not permanently displaced more than 1/8 in (3.2 mm) from its original position.	True __ False __.

Note(s):

Product Weight: ___kg. Force: ___N.

The insulation resistance measured was ___ohms.

Clause 61 **Impact Test on Guards** **N/A**

Method(s):

The appliance was subjected to an impact of 6.67 N (1.5 foot-pounds) on any surface that was exposed to a blow during intended use. Only one impact was applied at a given point. The impact was produced by dropping a steel sphere, which is 50.8 mm (2 inches) in diameter and weighing approximately 0.54 kg (1.18 pounds), from a height of 381 mm (15 inches). For surfaces other than the top of an enclosure, the steel sphere was suspended by a cord and allowed to swing as a pendulum, dropping through a vertical distance of 381 mm. For the test on a freestanding fan, the fan was to stand in its intended operating position without restraint. Following the impact test, the probe illustrated in Figure 9.1 was used to determine whether a portion of an impeller that presented a risk of injury to persons was exposed.

Deformation of a guard or detachment of a guard or portion of a guard during the impact test was acceptable if the part could readily be restored to its original shape or replaced in the intended manner. After restoration of the guard, the probe illustrated in Figure 9.1 was used to determine whether a portion of an impeller that could cause risk of injury to persons when inserted in any opening of the guard.

[X] The guard also serves as an enclosure, the guard was subjected to the impact test specified above.

[ ] for outdoor use products, other than portable fan, the appliance shall be cooled a temperature of minus 35.0 ±2.0°C

[ ] for crawl space or attic mount products, the appliance shall be cooled a temperature of minus 0 °C

When While the appliance is still cold, the specimens shall be subjected to the impact test.

Result(s):

A portion of an impeller was not accessible by the test probe illustrated in Figure 9.1.	True _X_ False __.
[X] The guard also serves as an enclosure	
The impact did not make uninsulated live parts or film-coated wire accessible to contact by the probe specified in Table 10.1, applied as indicated in Section 10, Accessibility of Live Parts.	True _X_ False __.
The impact did not produce a condition that affected the mechanical performance of the equipment.	True _X_ False __.
The impact did not produce a condition that increased the risk of electric shock.	True _X_ False __.
The impact cracked or dented of the enclosure that did not affect the function of any safety controls or constructional features such as thermostats, overload protective devices, water seals, or strain relief.	True _X_ False __.

Note(s):

Clause 62 **Static Force Test on Guards** **N/A**

Method(s):
When a 88.96-N (20-pound) force was applied for 1 minute over a 50.8-mm (2-inch) diameter area to any part of the guard of a portable fan or window fan.
When the 88.96-N force tipped over a freestanding fan, the force to be employed was the value that gave the maximum deflection without tip over. The test was conducted with and without the fan operating and with any adjustments made to provide the greatest resistance to tipping.
Result(s):
The probe shown in Figure 9.1 did not contact a portion of the moving part. True _X_ False __.

Clause 63 **Impeller Test for Portable Fans** **N/A**

Method(s):

A 6.35 mm (1/4 inch) diameter steel rod was pushed suddenly into the blade with the fan resting on the floor and operating at maximum speed and rated voltage. A test was made with the rod inserted near the hub, and a second sample was tested with the rod inserted 2/3 of the distance from the hub to the tip of the blade. The rod was to rest on the guard as it was inserted.

When an opening was smaller than 6.35 mm (1/4 inch), use the largest standard diameter steel rod that physically fitted.

Result(s):

A part of the blade was not thrown more than 1.52 m (5 feet) from the closest part of the base of the fan. True _X_ False __.

Clause 64 **Impeller Ignition Test** **N/A**

Method(s):

The motor thermal protector was shunted out of the motor winding so that the motor stayed continually energized. The rotor was locked. The fan was positioned as intended in application and was energized in a room ambient temperature of 10 to 40°C (50 to 104°F) at the voltage indicated in Table 40.1. The fan was energized until ultimate results were observed, but no more than 18 days. This procedure was repeated on two additional fan samples.

[ ] During the test specified above, impeller did not ignite, ended the test.

[ ] During the test specified above, impeller ignited. Additional test was conducted on three additional fans. A double layer of cheesecloth was to completely cover each fan before the test; and the test described above was repeated.

Remark:

The cheesecloth referenced above was to be bleached, 914.40 mm (36 inches) wide, 28.22 – 30.24 meters per kilogram (14 – 15 yards per pound), and having what was known to the trade as a count of 32 28 – that was, along the two directions parallel to the threads, there were 13 threads per centimeter in one direction and 11 threads per centimeter in the other (32 threads per inch in one direction and 28 threads in the other).

Result(s):

[ ] The impeller did not ignite and there was no risk of fire for the fan. True __ False __.

[ ] The impeller ignited, but the cheesecloth did not ignite and there was no emission of flame beyond the fan enclosure during the additional test on three additional fans. True __ False __.

Note(s):

Clause 65 **Component Breakdown Test** **Pass**

Method(s):

The circuit between any two terminals of a device was opened or shorted. Only one of the simulated fault conditions was imposed at a time. For a multi-terminal device, only two terminals were short-circuited at a time. Simulated circuits were not prohibited from being used, but when the tests performed on simulated circuits indicated damage to other parts of the fan to the extent that the safety of the fan was affected, the tests should be repeated on the fan.

Each test was conducted on a separate sample unless it was agreeable to those concerned that more than one test be conducted on the same sample.

A part of the fan that was removed during routine operation or maintenance was omitted when it results in a more severe test, and the part was not required for the functioning of the equipment; and exposed to view during intended operation.

During these tests, the sample was placed on a softwood surface covered with white tissue paper, and a single layer of cheesecloth was draped loosely over the entire enclosure. Exposed dead-metal parts of the sample were connected to earth ground through a 3 A nontime-delay fuse.

Result(s):

There was no glowing, charring, or flaming of the cheesecloth or tissue paper.	True _X_ False __.
There was no opening of the 3 A fuse.	True __ False __.
There was no emission of flame, sparks, or molten metal from the enclosure.	True _X_ False __.
There was no creation of any openings in the enclosure that results in accessibility of live parts.	True __ False __.
There was no loss of structural integrity to a degree that the equipment collapses or experiences displacement of parts that lead to short-circuiting or grounding of live parts.	True _X_ False __.

Note(s):

Component opened or shorted	Observations
R3	The unit shut down immediately, no damage, no hazards.
U1(pin 1-8)	The unit shut down immediately, no damage, no hazards.
D1	The unit shut down immediately, no damage, no hazards.
C5	The unit shut down immediately, no damage, no hazards.

Clause 66 **Fuseholder Cover Test** **N/A**

Method(s):
One fuseholder is to be tested. Subjected to a force of 36 N (8 lbs) applied for 1 minute to an open cover in any direction that the cover may be removed.

Result(s):
The open cover of a fused attachment plug, or current tap, or similar device, shall not detach from the body of the device. True __ False __.

Note(s):

Clause 70 **Drop Test** **N/A**

Method(s):

Each of three samples of a fan was dropped through a distance of 914.40 mm (3 feet) to strike a hardwood surface. Each sample was dropped three times. Three samples were employed for the test; however, if the manufacturer so elects, fewer samples may be used in accordance with Figure 70.1.

The hardwood surface was to consist of a layer of 19-mm (3/4-inch) thick tongue-and-groove oak flooring mounted on two layers of 19-mm thick plywood. The assembly rested on a concrete floor during the test.

All samples were supported on a surface 914.40 mm (3 feet) above the hardwood surface. Each sample was dislodged from the supporting surface by a sudden pull applied to the power-supply cord in a plane parallel to the supporting surface and twice by being pushed by a force parallel to the mounting surface applied to the top of the sample, which was placed at the edge of the supporting surface. The sample was oriented differently for each test.

Result(s):

After drop, the probe illustrated in Figure 9.1 was not able to contact a portion of a blade or blower wheel.	True __ False __.
There is the deformation of a guard or detachment of a guard or portion of a guard during the test. The part (including ribs of a desk fan) can readily be restored to its original shape or a detached guard can be readily replaced in the intended manner. After restoration of the guard, the guard, the probe illustrated in Figure 9.1 was not contact a portion of a blade or blower wheel.	True __ False __.
The part of the blade was not thrown more than 1.52 m (5 feet) from the closest part of the base of the fan.	True __ False __.

Note(s):

Clause 71 **Security of Handle Test** **N/A**

Method(s):

A handle used to support or carry a fan withstood a force of 4 times the weight of the fan. The force was started at zero and gradually increased so that the force was attained in 5 to 10 seconds and maintained for 1 minute.

[ ] When the handle was 76.20 mm (3 inches) or more in width, the force was uniformly distributed over a 76.20-mm width at the center of the handle without clamping.

[ ] When the width was less than 76.20 mm, the force was distributed over the entire handle.

[ ] When more than one handle was furnished on a fan and the fan could not be carried by only one handle, the force was to be distributed between the handles. The distribution of forces was determined by measuring the percentage of the fan weight sustained by each handle with the fan in the intended carrying position.

[ ] When a fan was furnished with more than one handle and could be carried by only one handle, each handle was to sustain the total force.

Result(s):

There was no breakage of the handle, its securing means, or that portion of the enclosure to which the handle was attached. True __ False __.

Note(s):

Product Weight: __ kg

Force: __ N

Clause 72 **Stability** **N/A**

Method(s):

The appliance was adjusted and operated in any intended manner so that it was most likely to tip over. The test procedure included such items as:

a) Positioning or removal of casters or feet that do not require a tool for removal;
b) Operating the fan at maximum speed and then evaluating it in the "off" position;
c) Adjusting the fan into any intended position; and
d) Fixing an oscillating type fan at any point in the oscillating cycle of movement.

[ ] A cord-connected freestanding appliance placed on a plane inclined 10 degrees from the horizontal.

[ ] A pedestal intended for ceiling fan mounting that is 1.68 m (66 inches) high or more and that also weighs 11.34 kg (25 pounds) or more placed as intended on a horizontal surface and subjected to a force of 44.48 N (10 pounds) applied horizontally at a point farthest from the horizontal surface up to a maximum of 1.52 m (5 feet).

[ ] A cord connected freestanding appliance that is 2.1 m (6.9 ft) high or more placed as intended on a horizontal surface and subjected to a force of 20 pounds applied horizontally at a height of 1.6 m (62 inches).

Result(s):

The product did not tip over during the test. True __ False __.

Note(s):

Test sample's weight is ____ kg; Height is _____cm

Clause 73 **Hassock Fan Load Test** **N/A**

Method(s):
A hassock fan sustained a 1779 N (400 pound) load uniformly distributed over the top of the fan for 1 minute.

Result(s):
During the test, there was no breakage or cracking of the enclosure or guard. True __ False __.
After the test, the probe illustrated in Figure 9.1 did not contact a portion of the impeller. True __ False __.

Note(s):

Clause 74 **Installation Test** **N/A**

Method(s):
An appliance intended for permanent connection to a power supply was subjected to an installation test in which the appliance was assembled and installed in accordance with the manufacturer's instructions.

Result(s):
After installation, the appliance functioned in the intended manner and complied with the applicable requirements in Sections 40 – 65. True __ False __.

Note(s):

Clause 87.1 **Temperature test** **N/A**

Method(s):

A fan that included or that was intended for use with a solid-state speed control was operated under each of the following conditions:

a) At the speed and rotation direction resulting in maximum motor temperatures. During this test the fan was connected to the load side of a triac. The triac was provided with associated circuitry allowing it to be triggered during each half-cycle of the ac input to the fan. Speed control was accomplished by varying the trigger points.

b) Connected and tested as described in (a) with a 2-volt dc offset potential applied to the ac fan input voltage by a suitable method and with the integral solid-state speed control bypassed. The 2-volt dc offset potential was obtained by using a speed control device having routing diodes and dual triggering circuits to allow independent adjustment of the positive and negative 1/2 cycle triac triggering points. The triggering points were adjusted so that a 2-volt dc bias was measured on the switched ac output waveform. The dc bias may be measured by a dc volt meter having a frequency damped response in the range of 0 – 120 hertz. See Figure 87.1. Alternately, the 2-volt dc offset potential can be obtained by using a power source capable of delivering the proper test voltage along with the 2-volt dc offset.

c) With the fan connected to an ac supply modified to produce half-wave output. The supply was switched from sinusoidal to half-wave output after the fan was operating at maximum speed. This test was conducted in the rotation direction and speed control setting resulting in maximum motor temperatures. If after the supply was switched from sinusoidal to half-wave operation, the fan motor shaft did not continue to rotate in a manner that was a usable normal condition, the locked-rotor temperature requirements described as follow were used instead of the maximum temperature rises specified in Table 46.1.

When the fan motor shaft did not rotate or rotates in a manner not determined to be normal after the supply was switched from sinusoidal to half-wave operation as described in (c) or, the motor did not restart when operated from a half-wave source after the motor was de-energized, the motor shall comply with the applicable temperature requirements of the Locked-Rotor or No-Load Temperature Test requirements in the Standard for Impedance Protected Motors, UL 1004-2 or the Locked-Rotor Temperature Test requirements in the Standard for Thermally Protected Motors, UL 1004-3.

(Refer to the standard for details)

Result(s):

During the test, the appliance did not: True __ False __.

a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire;

b) cause deterioration of any materials employed in the appliance; or

c) have constant temperature at specific points more than those specified in standard.

[ ] The thermal protective device did not operate during the temperature test. True __ False __.

Note(s):

Clause 87.2 **Abnormal operation test** **N/A**

Method(s):

The motor was installed in the fan, and the fan was installed as described for the temperature test in section 46. The motor was under the locked-rotor conditions (same test method as that of UL1004) and the duration was 15 days.

The power supply was modified to provide half-wave output directly to the motor and bypassing the integral solid-state speed control.

Motor protection type:

[ ] Thermally protected motor:

Thermal Protection type:

[ ] Thermal cutoff ; [ ] Automatically reset; [ ] Manually reset;

[ ] Impedance protected motor;

Result(s):

The fuse in the grounding conductor did not open.	True __ False __.
There was no flaming or severe or prolonged smoking.	True __ False __.
There was no flaking, embrittlement or charring of the insulation.	True __ False __.
There was no electrical or mechanical malfunction of any associated component parts such as capacitors.	True __ False __.
The motor was still capable of operating electrically.	True __ False __.
There was no dielectric breakdown during the Dielectric Voltage Withstand Test.	True __ False __.

Note(s):

Clause 91.1 **Static Load Test** **N/A**

Method(s):

[ ] Fans with other than ball-joint hanger means

The mounting means is installed in accordance with the installation instructions provided by the manufacturer. The other parts of the fan are not to be installed. A static load of four times the maximum possible weight of the fan and accessories (including the consideration mentioned in 148.4) is to be gradually applied and then supported for one minute by the installed mounting means.

If the fan is intended to be suspended by a single “J” hook, the above test is conducted:

a) First with the fan installed as intended and supported by the “J” hook, and
b) Second with the “J” hook removed and the fan suspended by the chain only.

[ ] Fans with ball-joint hanger means

The mounting means is to be mounted in accordance with the manufacturer’s instruction using the mounting means provided with the fan. The mounting means is to be subjected to a static load of four times the weight of the fan and all accessories for 7 hours. The load is to be applied so as to transmit the maximum stress to the mounting means. Mounting angle A is to be 30 degrees; however, the mounting angle may be less than 30 degrees, but not less than 10 degrees, if so recommended in the installation instruction. The load angle is to be in the direction of the hanger bracket opening. If the installation of a canopy could affect test results, the canopy is to be installed in accordance with the installation instruction.

Result(s):

After the load was removed, the security of the mounting means to the building structure or outlet box and the security of the connection of the fan to the mounting means were both as originally installed. True __ False __.

Note(s):

For a ball-joint hanger means incorporating polymeric material, before the above test, it shall be conditioned according to Clause 91.2.2.

Clause 91.2.2 **Temperature condition test** **N/A**

Method(s):
Three samples of the polymeric mounting means are to be conditioned for seven hours at 0°C (32°F). For damp or outdoor location ceiling-suspended fans, low temperature conditioning is to be conducted at minus 35.0 ±1.0°C (minus 31 ±1.8°F). The same three samples are then to be conditioned for seven hours in an air-circulating oven maintained at a temperature of 70°C (158°F). The samples are to be cooled to room temperature.

Result(s):
As a result of the conditioning described as above, there was no softening, cracking, warping, or other deterioration that decreases the integrity of the polymeric mounting means. True __ False __.

Note(s):

Clause 91.2.3 **Endurance test** **N/A**

Method(s):
The same sample of the ceiling-suspended fan, and a sample of the polymeric mounting means that has been conditioned in accordance with 91.2.2.2, are to be mounted in accordance with the manufacturer's instructions. The fan is to be connected to a 60 hertz electrical supply adjusted to the appropriate nominal test voltage specified in Table 40.1. The fan is then to be subjected to 1000 cycles of operation. For a reversible fan, each cycle of operation is to consist of throwing the switch in one direction, allowing the blade to reach full operating speed in that direction; then, without a pause, throwing the switch to the position in which rotation is reversed, allowing the blade to reach full operating speed in that direction. For a unidirectional fan, each cycle of operation is to consist of starting the fan, allowing the blade to reach full maximum operating speed, shutting off the fan, allowing the blade to come to a complete stop.

Result(s):
After being tested as described as above, the means used to prevent rotation or twisting between the fan assembly and the hanger assembly did not be damaged such that it permits rotation or twisting between the assemblies. True __ False __.

Note(s):

Clause 91.3 **Polymeric blades test** **N/A**

Method(s):
The polymeric fan blades in the as-received condition are to be installed on their corresponding brackets with the flathead screws tightened to a maximum torque of 2.82 N·m (25 lbf·in.).

The polymeric blade with bracket assemblies then is to be conditioned at 0 ±1.0°C (32 ±1.8°F) for 7 hours. Following this conditioning, the assemblies are to be allowed to return to room temperature (a minimum of 4 hours).

The assemblies are then to be conditioned at 50.0 ±1.0°C (122 ±1.8°F) at a relative humidity of 80 percent for 7 hours and allowed to return to room temperature (a minimum of 4 hours). See 91.3.5. This sequence described in 91.3.3 and 91.3.4 constitutes one cycle.

Immediately following the conditioning described in91.3.4, before allowing the samples to return to room temperature, the screws are to be tightened to the torque value applied in 99.1.2

The cycle described in 91.3.3 and 91.3.4 is to be repeated twice for a total of 3 cycles.

Result(s):
a) Shall not show any signs of blade cracking including the area around the screwholes; True __ False __.
b) Shall not result in the reduction of the minimum blade height allowed on the final installation due to blade warpage; and
c) Shall not result in unacceptable blade warpage as determined by compliance with theTemperature Test, Section 46, using the entire appliance with the conditioned blade-bracket assemblies installed.
Note(s):

Clause 91.4.1 **Static load test for ceiling-suspended fan blade brackets** **N/A**

Method(s):

The mounting feet of the blade bracket are to be fixed by a support, vise, or other securing means. The bracket is to be oriented as intended for actual use as illustrated in Figure 91.2. After securing the bracket mounting feet, a crossbar is to be secured across the top of the two outermost blade mounting holes. The load is to be suspended from the center of the crossbar for one minute as illustrated in Figure 91.2. The combined weight of the crossbar, load, and means of load suspension is to be in accordance with Table 91.1.

Figure 91.2
Static load test for fan blade brackets

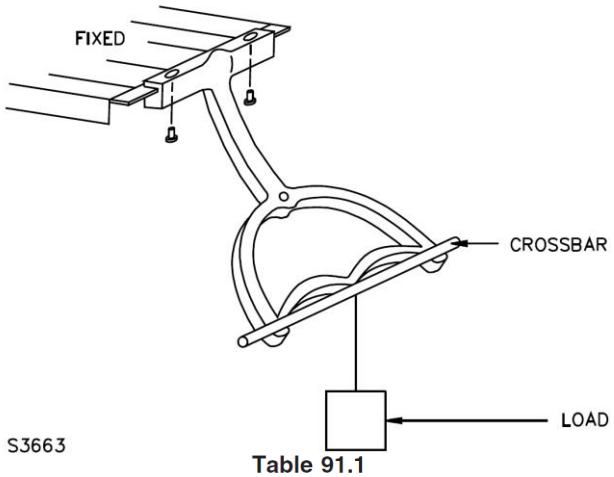


Table 91.1
Static loads for blade brackets

Diameter of ceiling fan[a]	Total static load on sample blade bracket[b]
Less than 1.14 m (45 inches)	9.07 kg (20 pounds)
1.14 m (45 inches) or greater	15.88 kg (35 pounds)
[a] Fan blade span.	
[b] Includes weight of crossbar and means of load suspension.	

Result(s):

As a result of the load, the bracket had no cracks as determined by visual inspection with a 4-power magnifying glass. True __ False __.

Note(s):

Clause 91.4.2 Dynamic load test for ceiling-suspended fan blade brackets N/A

Method(s):
The fan blades and blade brackets are to be installed on the test fan in accordance with the manufacturer's installation instructions. The fan blade length and fan speed are to be considered so as to test the fan and blade combinations that represent the most severe dynamic forces that are induced by the 10 gram (0.022 pounds) imbalance described as below.

A 10 gram (0.022 pounds) flat weight is to be secured to the fan blade that will result in the most change in the vertical distance of the blade imbalance. The weight is to be secured to the fan blade at the outermost point from the center of the fan, but not on the edge of the fan blade.

Then the fan is to be operated at maximum normal speed rpm for 24 hours. A reversible fan is to be operated in the upward airflow direction.

Result(s):
As a result of the test, the bracket shall have no cracks as determined by visual inspection with a 4-power magnifying glass. True __ False __.

Note(s):

Clause 99.1 **Polymeric blades test** **N/A**

Method(s):

99.1.2 The polymeric fan blades in the as-received condition are to be installed on their corresponding brackets with the flathead screws tightened to a maximum torque of 2.82 N·m (25 lbf·in.).

99.1.3 The polymeric blade with bracket assemblies then is to be conditioned at minus 35.0 ±1.0°C (minus 31 ±1.8°F) for 7 hours. Following this conditioning, the assemblies are to be allowed to return to room temperature (a minimum of 4 hours).

99.1.4 The assemblies are then to be conditioned at 50.0 ±1.0°C (122 ±1.8°F) at a relative humidity of 80 percent for 7 hours and allowed to return to room temperature (a minimum of 4 hours). See 99.1.5. This sequence described in 99.1.3 and 99.1.4 constitutes one cycle.

99.1.5 Immediately following the conditioning described in 99.1.4, before allowing the samples to return to room temperature, the screws are to be tightened to the torque value applied in 99.1.2.

99.1.6 The cycle described in 99.1.3 and 99.1.4 is to be repeated twice for a total of 3 cycles.

Result(s):

The polymeric blade-bracket assembly, consisting of a blade attached to the blade brackets, of a ceiling-suspended fan intended for damp locations True __ False __.

a) Shall not show any signs of blade cracking including the area around the screwholes;

b) Shall not result in the reduction of the minimum blade height allowed on the final installation due to blade warpage; and

c) Shall not result in unacceptable blade warpage as determined by compliance with theTemperature Test, Section 46, using the entire appliance with the conditioned blade-bracket assemblies installed.

Note(s):

Clause 114.2 **Temperature test for rangehoods** **N/A**

Method(s):

Rangehood sample shall be tested with the specified cooking, or shall be tested with a cooking unit which has three 1250 W surface element and one 2100 W surface element, as follows:

a) The sample shall be mounted and operated with the marked clearance above the cooking surface;
b) The test shall be conducted in the wooden alcove described in clause 114.2.3; and
c) The cooking unit shall be operated under the conditions specified in clause 114.2.4..

(Refer to the standard for details)

The sample was connected to a __ volt, __ Hz supply and operated under each condition of normal service. If the sample employing a general use receptacle was loaded to the marked rating of the receptacle. The maximum length of the supply cord was used for the Temperature Test. Using thermocouples and a hybrid recorder to record temperatures. The test was continued until temperatures have become constant. If the test was conducted at an ambient temperature other than 27°C (77°F), an observed temperature was corrected.

Result(s):

During the test, the appliance did not:

a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire — True __ False __.
b) cause deterioration of any materials employed in the appliance — True __ False __.
c) have constant temperature rises at specific points more than those specified in standard. — True __ False __.
[ ] The thermal protective device did not operate during the temperature test. — True __ False __.

Note(s):

Clause 114.2 Temperature test for rangehoods **N/A**

Input: ____V, ____Hz, ____A, _____W

Load: _____ Ambient Temp.: _____ ºC

Thermocouple method

Ch.	Components (or Locations)	Temp. (ºC)	Temp. Rise (K)	Limit Rise (K)

Resistance-change Method

Components	R1 (Ω)	T1 (ºC)	R2 (Ω)	T2 (ºC)	ΔT (K)	Limited ΔT (K)

Clause 114.3 **Grease conditioning** **N/A**

Method(s):
Three samples of a motor are to be completely coated with a minimum 3.2-mm (1/8-inch) thick layer of lard and placed for 30 days in a forced-draft air-circulating oven maintained at a temperature of 150°C (302°F).

After the conditioning,
1. Visual check
2. Dielectric voltage-withstand test, specified in 47.1, except that the potential is to be applied between current carrying parts and aluminum foil wrapped tightly over the motor assembly.
3. Insulation resistance test

Result(s):
At the end of the conditioning

a) There was no noticeable change or deterioration of the motor insulation with respect to accessibility, mechanical strength, or the like. True __ False __.

b) There was no dielectric breakdown or arc-over. True __ False __.

c) The insulation resistance of the motor is no less than 50,000 ohms between live parts and interconnecting dead metal parts. Charring or discoloration of the insulation is acceptable unless the insulation flakes or rubs off when rubbed with thumb or finger pressure. True __ False __.

Note(s):

Test	Sample No. 1	Sample No. 2	Sample No. 3
Dielectric voltage-withstand test	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail
Insulation resistance test	_____ohms	_____ohms	_____ohms

Clause 114.4 **Oven and humidify conditioning** **N/A**

Method(s):

Three samples of a motor shall be placed for 7 hours in a forced-draft air-circulating oven maintained at a temperature of 100°C (212°F). At the end of 7 hours, the samples are to be removed from the oven and conditioned for 48 hours in air having a relative humidity of 88±2 percent and a temperature of 32.0 ±2.0°C (89.6 ±3.6°F). The cycle is then to be repeated.

After the conditioning,

1. Visual check
2. Dielectric voltage-withstand test, specified in 47.1, except that the potential is to be applied between current carrying parts and aluminum foil wrapped tightly over the motor assembly.
3. Insulation resistance test

Result(s):

At the end of the conditioning

a) There was no noticeable change or deterioration of the motor insulation with respect to accessibility, mechanical strength, or the like. True __ False __.

b) There was no dielectric breakdown or arc-over. True __ False __.

c) The insulation resistance of the motor is no less than 50,000 ohms between live parts and interconnecting dead metal parts. Charring or discoloration of the insulation is acceptable unless the insulation flakes or rubs off when rubbed with thumb or finger pressure. True __ False __.

Note(s):

Test	Sample No. 1	Sample No. 2	Sample No. 3
Dielectric voltage-withstand test	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail
Insulation resistance test	_____ohms	_____ohms	_____ohms

Clause 114.5 **Grease and humidity conditioning** **N/A**

Method(s):

Three samples of a motor are to be conditioned for 48 hours in air having a relative humidity of 88±2 percent at a temperature of 32.0 ±2.0°C (89.6 ±3.6°F). After the humidity conditioning, each sample is to be subjected to the grease conditioning specified in 92.2.1.

After the conditioning,

1. Visual check
2. Dielectric voltage-withstand test, specified in 47.1, except that the potential is to be applied between current carrying parts and aluminum foil wrapped tightly over the motor assembly.
3. Insulation resistance test

Result(s):

At the end of the conditioning

a) There was no noticeable change or deterioration of the motor insulation with respect to accessibility, mechanical strength, or the like. True __ False __.

b) There was no dielectric breakdown or arc-over. True __ False __.

c) The insulation resistance of the motor is no less than 50,000 ohms between live parts and interconnecting dead metal parts. Charring or discoloration of the insulation is acceptable unless the insulation flakes or rubs off when rubbed with thumb or finger pressure. True __ False __.

Note(s):

Test	Sample No. 1	Sample No. 2	Sample No. 3
Dielectric voltage-withstand test	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail	[ ] Pass; [ ] Fail
Insulation resistance test	_____ohms	_____ohms	_____ohms

Clause 114.9 **Glass impact test** **N/A**

Method(s):
A test specimen of tempered glass shall be broken by impact to determine the acceptability of the temper of the glass

The test shall be conducted at 25± 5°C (77± 9°F).

The specimen shall be weighed, and the weight of 10 in^2 (65 cm^2) shall be calculated

The lower surface of the tempered glass specimen shall be covered with adhesive tape to retain the particles when the specimen breaks

The glass shall be placed on a flat surface and shattered with a center punch at a point 1.18 in (30 mm) from the midpoint on the edge of the glass toward the center. The edge shall be defined as the longest dimension on an irregular shape. When shattered, the glass shall completely dice into particles

The 10 largest crack-free particles shall be weighed together within 5 min, to avoid further fracture.

Result(s):
The total weight is less than the calculated weight of 10 in^2 (65 cm^2) of the original specimen. True __ False __.

Note(s):
Ambient temperature of test room: _____ °C

Weight of specimen (g)	Acreage of specimen (in^2)	Calculated weight of 10 in^2	Total weight of the 10 largest crack-free particles (g)

Clause 144.1 **Normal temperature test** **N/A**

Method:

A ceiling insert fan/light combination is to be tested at the voltage described in 46.1.10 and with the lamp connected to a separate supply source to yield maximum marked lamp wattage. The test is to be conducted with the unit installed in a box filled with cellulosic insulation. The test is to be conducted at an ambient temperature of 25 ℃ (77+/-9℉). The temperatures attained shall not exceed the values specified in Table 46.1.

A ceiling insert fan/light combination is to be mounted in a rectangular box built of 12.7-mm (1/2-inch) thick fir plywood, (a) – (d) grade. The plywood test box is to have dimensions such that each wall is 216 mm (8-1/2 inches) from the nearest point of the recessed housing, junction box, or incidental projection of the unit and the top edge of each wall is 216 mm above the height of the installed unit. The top of the box is to be open.

A hole is to be provided in the side of the box to permit an exhaust duct or hose of the size recommended in the installation instructions to exit the box. The hose is to be installed parallel to the bottom of the test box and is to be just long enough to reach through the hole. There are to be no bends in the exhaust duct or hose.

The interior space between the plywood box and the exterior surface of the recessed housing is to be filled with loose fill cellulosic insulation(rating: thermal resistance of 3.75 – 3.85 R with a conditioned density of 32.04 – 40.05 kg/m3 (2.0 – 2.5 pounds per cubic foot).

The test is to be conducted under each of the following conditions:

a) Fan on – Light on

b) Fan off – Light on

Result:

[ ] During the test, a thermal protective device connected in the light circuit shall not cycle (nuisance trip). True __ False __.

Notes:

The test as above will be combined with section 46, and find the data in the datasheet of section 46.

Clause 144.2 **Abnormal test** **N/A**

Method:

Inherently protected – overlamping

An inherently protected unit connected to a supply as described in 144.1.1 and installed as described in 144.1.3 – 144.1.10 is to be operated with the largest type and wattage lamp that will physically fit into the unit with the trim and diffuser installed and positioned as intended. The test is to be conducted in the fan off-light on condition. The temperatures attained on parts of the unit in contact with combustible materials (for example, insulation, the test box, and unit support surfaces) after 7-1/2 hours of operation shall not exceed 90℃ (194℉).

Result:

The temperatures attained on parts of the unit in contact withcombustible materials (for example, insulation, the test box, and unit support surfaces) after 7-1/2 hours of operation shall not exceed 90℃ (194℉).

True __ False __.

Locked-rotor

An ceiling insert fan light combination, inherently protected unit connected to a supply as described in 144.1.1 and installed as described in 144.1.3 – 144.1.10 is to be operated in the locked-rotor condition with the light on and with a lamp of the maximum rated wattage marked on the unit.

Result:

There shall be no emission of flame or molten metal after 7-1/2 hours of operation.

True __ False __.

Notes:

Clause 160.1 **Input test** **N/A**

Method(s):
The sample was operated under conditions of intended service, when connected to a power-supply circuit of maximum rated voltage and rated frequency.

The test shall be conducted on the evaporative cooler:
a) with the cooler dry, and
b) when it is using water in the intended manner

Result(s):
The current input to an appliance was not more than 110 percent of the rated value. True __ False __.

Test condition	Supply Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Marked Rating (A/W)	Limit (A/W)
With cooler dry						
With water filled						

Note(s):

Clause 160.2 Temperature test (with conjunction to Clause 46) N/A

Method(s):

The sample was connected to a __ volt, __ Hz supply and operated under each condition of normal service. If the sample employing a general use receptacle was loaded to the marked rating of the receptacle. The maximum length of the supply cord was used for the Temperature Test. Using thermocouples and a hybrid recorder to record temperatures. The test was continued until temperatures have become constant. If the test was conducted at an ambient temperature other than 27°C (77°F), an observed temperature was corrected.

The above test shall be conducted on all evaporative coolers with the cooler dry, and also be conducted on an evaporative cooler employing a mechanical pump driven by the fan or blower motor when the cooler is using water in the intended manner.

Result(s):

During the test, the appliance did not: True __ False __.

a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire;

b) cause deterioration of any materials employed in the appliance; or

c) have constant temperature rises at specific points more than those specified in standard.

[ ] The thermal protective device did not operate during the temperature test. True __ False __.

True __ False __.

Note(s):

Clause 160.2 Normal Temperature Tests **N/A**

Input: ____V, ____Hz, ____A, _____W

Load: _____ Ambient Temp.: _____ ºC

Thermocouple method

Ch.	Components (or Locations)	Temp. (ºC)	Temp. Rise (K)	Limit Rise (K)

Resistance-change Method

Components	R1 (Ω)	T1 (ºC)	R2 (Ω)	T2 (ºC)	ΔT (K)	Limited ΔT (K)

Clause 160.3 **Moisture resistance test** **N/A**

Method(s):

The evaporative cooler is to be operated for 24 hours in cycles of 15 minutes “on” and 45 minutes “off”, with water circulating through it in the intended manner. Following the final cycle of 24 hours, the appliance shall be subject to the following tests immediately:

[ ] for cord-connected appliance rated for a nominal 120 V supply, leakage current test required in clause 41.1, except that the test is to be discontinued when the leakage current stabilizes

[ ] for appliance other than above one, insulation resistance shall be measured

Dielectric voltage withstand test, in which 1000 volts (60 hertz) between live parts and interconnected dead-metal parts

Result(s):

[ ] The sample complied with the requirement of leakage current test.	True __ False __.
[ ] As measured, the insulation resistance is not less than 50,000 ohms.	True __ False __.
The sample could withstand the 1000 volts test voltage without breakdown for 1 minute.	True __ False __.

Note(s):

[ ] for the leakage current test, the measured maximum leakage current is _____mA;
and the limit is ____mA for this type of appliance

[ ] for insulation resistance test, the measured insulation resistance is _____ohms.

Clause 160.4 **Stability test (with conjunction to clause 54)** **N/A**

Method(s):
The appliance shall be placed on a plane inclined 10 degrees from the horizontal and adjusted and operated in any intended manner so that it was most likely to tip over. The test procedure included such items as:

a) Positioning or removal of casters or feet that do not require a tool for removal;
b) Operating the appliance at maximum speed and then evaluating it in the "off" position;
c) Adjusting the appliance into any intended position; and
d) Fixing an oscillating type fan at any point in the oscillating cycle of movement.

Result(s):
The appliance did not tip over during the test. True __ False __.
Note(s):

Clause 160.6 **Overflow test** **N/A**

Method(s):

The appliance shall be connected to a water supply as intended.

[ ] With any provided timer switch functioning as intended, a provided float- or pressure operated fill switch shall be defeated and the product started. The fill shall be continued for an additional 15 minutes following the first evidence of overflow of the reservoir. If a timer switch is provided, it should be allowed to cycle as intended for the duration of the test and the test shall be continued for 7 hours.

[ ] A timer switch, if provided, shall be defeated and the product started. If no automatic shutoff means is provided, the fill shall be continued for an additional 15 minutes following the first evidence of overflow of the reservoir. If a float- or pressure-operated switch is provided as an automatic shutoff means, actuation of the fill switch to terminate the fill will also terminate the test.

[ ] If both a timer switch and a float- or pressure-operated fill switch are provided, the devices shall each be defeated independently as described above.

[ ] If the product is not provided with a timer or a float- or pressure-operated fill switch; that is, the water source is intended to be controlled manually, the product shall be started and the fill shall be continued for an additional 15 minutes following the first evidence of overflow of the reservoir.

Following above conditioning, the below check and tests shall be conducted immediately:

1. Visual check

2. [ ] for cord-connected appliance rated for a nominal 120 V supply, leakage current test required in clause 48.4.1-48.4.6.

   [ ] for appliance other than above one, insulation resistance shall be measured, as required in clause 48.5.1

Dielectric voltage withstand test, as required in clause 48.6.1.

Result(s):

There is no wetting of uninsulated live parts or film coated wire, other than motor winding, and no accumulation of water in an electrical enclosure. True __ False __.

[ ] The sample complied with the requirement of leakage current test. True __ False __.

[ ] As measured, the insulation resistance is not less than 50,000 ohms. True __ False __.

The sample could withstand the 1000 volts test voltage without breakdown for 1 minute. True __ False __.

Note(s):

[ ] for the leakage current test, the measured maximum leakage current is _____mA; and the limit is ____mA for this type of appliance

[ ] for insulation resistance test, the measured insulation resistance is _____ohms.

Clause 160.7 **Spill test** **N/A**

Method(s):

The evaporative cooler is to be positioned as intended in use. The water reservoir is to be filled to capacity with water and then an additional four hundred-forty-four milliliters (15 oz) of water are to be poured into the reservoir at a rate of approximately 30 mL/s (1 oz per second).

With 30 minutes after the above conditioning, the below check and tests are conducted.

1. Visual check
2. [ ] for cord-connected appliance rated for a nominal 120 V supply, leakage current test required in clause 48.4.1-48.4.6.

   [ ] for appliance other than above one, insulation resistance shall be measured, as required in clause 48.5.1
3. Dielectric voltage withstand test, as required in clause 48.6.1.

Result(s):

There is no wetting of uninsulated live parts or film coated wire, other than motor winding, and no accumulation of water in an electrical enclosure. True __ False __.

[ ] The sample complied with the requirement of leakage current test. True __ False __.

[ ] As measured, the insulation resistance is not less than 50,000 ohms. True __ False __.

The sample could withstand the 1000 volts test voltage without breakdown for 1 minute. True __ False __.

Note(s):

[ ] for the leakage current test, the measured maximum leakage current is _____mA; and the limit is ____mA for this type of appliance

[ ] for insulation resistance test, the measured insulation resistance is _____ohms.

Clause 160.8 **Static loading test** **N/A**

Method(s):
The unit is to be installed in a simulated window frame in accordance with the manufacturer's instructions and with the mounting hardware supplied by the manufacturer, including any brackets or bracing intended to support the rear edge of the unit. The water reservoir shall be filled with the maximum amount of water allowed by the construction of the unit. A load per Table 160.1 acting vertically downward shall be applied along the edge parallel with and farthest from the plane of the window.

In this test, a 5 inch (127 mm) wide channel or equivalent is to be placed flat across the top of the outer enclosure of the unit with one edge of the channel flush with the outer edge of the enclosure. Equal weights are to be suspended on wire ropes attached to the center of the channel on either side of the unit.
Result(s):
The evaporative cooler withstood the test without collapse of the cabinet, base, or the supporting means, and did not fall out of the test window. True _X_ False __.
Note(s):

Clause 191.2 **Input Test** **N/A**

Method(s):
The fan is operated under conditions of intended service, when connected to a power-supply circuit of maximum rated voltage and rated frequency (if applicable).

Result(s):
The current input to an appliance was not more than 120 percent of the rated value. True __ False __.

Supply Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Marked Rating (A/W)	Limit (A/W)

Note(s):

Clause 191.3 **Temperature test (with conjunction to Clause 46)** **N/A**

Method(s):
The sample was connected to AC power supply at _/_ volt, _/_ Hz, or _5_VDC, and operated under each condition of normal service.

Using thermocouples and a hybrid recorder to record temperatures. The test was continued until temperatures have become constant. If the test was conducted at an ambient temperature other than 27°C (77°F), an observed temperature was corrected.

Note: For a multispeed fan, the temperature test is to be conducted at the maximum speed at rated voltage. When a fan is equipped with a temperature sensing speed control, the temperature test is to be conducted at the lowest ambient temperature required to attain maximum speed.

Result(s):

During the test, the appliance did not: True __ False __.

a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire;

b) cause deterioration of any materials employed in the appliance; or

c) have constant temperature rises at specific points more than those specified in standard.

[X] The thermal protective device did not operate during the temperature test. True __ False __.

Note(s):

Clause 191.3 Normal Temperature Tests **N/A**

Input: ____V, ____Hz, ____A, _____W

Load: _____ Ambient Temp.: _____ ºC

Thermocouple method

Ch.	Components (or Locations)	Temp. (ºC)	Temp. Rise (K)	Limit Rise (K)

Resistance-change Method

Components	R1 (Ω)	T1 (ºC)	R2 (Ω)	T2 (ºC)	ΔT (K)	Limited ΔT (K)

Clause 191.4 **Dielectric Voltage Withstand Test** **N/A**

Method(s):
A low voltage component fan is to withstand for 1 minute without breakdown the application of a 500 volt, 60-hertz essentially sinusoidal potential between the input leads or terminals and dead metal parts, or between the input leads or terminals and metal foil which is wrapped around the hub of the fan.
The test potential was 500 V (Choice: 1000 V/1000 V plus twice the rated voltage/500 V), 60 Hz between:
[X] Between the input leads or terminals and dead metal parts.
[X] Between the input leads or terminals and metal foil which is wrapped around the hub of the fan.

Result(s):
In each case, there was no breakdown or arc-over. True __ False __.

Clause 191.5 **Abnormal Operation Locked Rotor Test** **N/A**

Method(s):

A low voltage component fan is to be connected to a supply source at rated voltage while placed on a soft wood surface which is to be covered by a single layer of white tissue paper. The fan is to be covered with a single layer of cheesecloth. The fan is to then be operated with the rotor locked for 7 hours and the winding temperature is to be monitored.

Result(s):

[X] Following the locked rotor test described in 191.5.1, the dielectric voltage withstand test described in 191.4.1 was conducted;	True __ False __.
[X] Following the locked rotor test described in 191.5.1, a low voltage component fan with board traces acting as a coil winding shall be inspected for degradation of the printed wiring board as indicated by wrinkling, cracking, blistering, or loosening of any conductor, or any delamination of the base material or bonding layer;	True __ False __.
[X] When the stabilized winding temperature does not exceed the temperatures for the class of insulation per Table 46.1.	True _ False __.
[X] When the stabilized winding temperature exceeds the temperatures for the class of insulation per Table 46.1, the locked rotor test shall be continued in accordance with 50.3 – 50.7.	True __ False __.
[X] When low voltage protected fans are tested according to 50.3 – 50.7, temperatures should be evaluated according to Table 8.1 of the Standard for Thermally Protected Motors, UL 1004-3.	True __ False __.

Clause 218.2 **Charging input/output test** **Pass**

Method(s):
The input to the charger of a battery-operated fan is to be measured while charging a completely discharged battery pack. The input rating of the charger shall not be exceeded.

Result(s):
The input rating of the charger shall not be exceeded. True __ False __.

Supply Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	Marked Rating (A/W)	Limit (A/W)
DC5V	/	0.74A	3.7	/	2.0A	2.2A

Note(s):

Clause 218.3 **Input test** **N/A**

Method(s):
A fully charged sample shall be tested. The unit shall be operated at maximum normal load and the open circuit battery voltage and maximum battery load current shall be measured.

Result(s):
The open circuit battery voltage and maximum battery load voltage and current shall be measured. True _X_ False __.

Load Condition	Voltage (V)	Current (A)	Wattage (W)	Power Factor	Marked Rating (A/W)	Limit (A/W)

Note(s):

Clause 218.4 **Temperature test** **Pass**

Method(s):
The Temperature Test of Section 46 is to be conducted for a battery powered fan with the requirements in 218.4.2 supplementing the requirements in Section 46, Temperature Test.

A fully charged sample shall be tested.

Result(s):
During the test, the appliance did not: True _X_ False __.
a) attain constant temperatures at any point on the fan sufficiently high to result in a risk of fire;
b) cause deterioration of any materials employed in the appliance; or
c) have constant temperature at specific points more than those specified in standard.

[X] The thermal protective device did not operate during the temperature test. True _X_ False __.

Clause 218.4 Temperature test

Input: DC5 V, / Hz, 0.74 A, 3.7 W

Load: / Ambient Temp.: 25.0 ºC

Thermocouple method

Ch.	Components (or Locations)	Temp. (ºC)	Temp. Rise (K)	Limit Rise (K)
1	DC inlet	36.1	11.1	45
2	PCB near U1	54.7	29.7	105
3	PCB near D1	55.8	30.8	105
4	L1	48.6	23.6	105
5	C5	46.6	21.6	80
6	Internal wire	35.9	10.9	55
7	DC Fan motor	31.3	6.3	80
8	Switch	35.7	10.7	45
9	Enclosure, inside	36.8	11.8	Ref.
10	Enclosure, outside	31.1	6.1	65

Resistance-change Method

Components	R1 (Ω)	T1 (ºC)	R2 (Ω)	T2 (ºC)	ΔT (K)	Limited ΔT (K)
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

Clause 218.5 **Charger temperature test** **N/A**

Method(s):
The charger temperature test is to be conducted as follows:

[ ] A fan with the charger integral with the fan is to be operated while charging a fully discharged battery pack until constant temperatures are attained. Temperatures are to be monitored during the entire charging operation so that temperatures in excess of the requirements would be recorded, if any.

[X] For a fan with a separate charger, the charger is to be operated with its accessible output terminals short-circuited until constant temperatures are attained.

Result(s):
There was no temperatures in excess of the requirements True __ False __.

Clause 218.6 **Dielectric Voltage Withstand Test** **Pass**

Method(s):
With the battery disconnected, a battery powered fan shall withstand for 1 minute without breakdown the application of a 500 volt, 60-hertz essentially sinusoidal potential

[X] Between the battery terminals and dead metal parts, or
[X] Between battery terminals and metal foil which is wrapped around the fan enclosure.

Result(s):
In each case, there was no breakdown or arc-over. True _X_ False __.

Clause 218.7 **Enclosure impact test** **Pass**

Method(s):
A non-metallic battery enclosure shall comply with the impact requirements specified in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C. A 6.8 J (5 ft·lbf) impact value shall apply in the as-received condition. This impact value shall also be used for cold impact testing of batteries intended to be used in [X] cold environments, such as fans mounted in the crawl space or attic and [ ] outdoor use products.

Enclosure impact testing shall be conducted on the battery enclosure while connected to the fan and while disconnected. Batteries shall be fully charged prior to the test.

Result(s):
After this test, there was no shorting of the batteries, no cracks in the enclosure that would allow the probe of Figure 218.1 to bridge the gap between live parts of opposite polarity, no increased risk of fire. True _X_ False __.

Note(s):
The following parts (Points) were subjected to the impact test:
No. 1 Point: top enclosure ; No. 2 Point: side enclosure ; No. 3 Point: bottom enclosure .

Condition Temperature: 19.0 °C. c: 7.0 J.

Clause 218.8 **Drop Test** **Pass**

Method(s):
Detachable or separable battery packs shall be tested as described in Section 70.

Result(s):
After the test, there was no shorting of the batteries and no cracks in the enclosure which would allow the probe of Figure 218.1 to bridge the gap between live parts of opposite polarity, and no increased risk of fire

True _X_ False __.

Clause 218.9 **Locked rotor test** **Pass**

Method(s):

A battery powered fan is to be provided with a fully charged battery. The fan/battery assembly shall be placed on a soft wood surface which is to be covered by a single layer of white tissue paper. The fan/battery assembly is to be covered with a single layer of cheesecloth. The fan is to then be operated with the rotor locked until ultimate results or the battery is fully discharged.

[X] If a circuit component opens during the test, the test shall be conducted two more times on new samples, confirming that the same result will be obtained in each test.

[X] For a multispeed fan, the locked rotor test is to be conducted at the maximum speed setting.

Result(s):

The tissue paper or cheesecloth did not ignite during or after the test.	True _X_ False __.
Following the locked rotor test described in 218.9.1, the dielectric voltage withstand test described in 218.6 was conducted;	True _X_ False __.
Winding temperature did not exceed the first hour temperature limits for the class of insulation per Table 41A.1 of Standard for Thermally Protected Motor, UL 1004-3.	True _X_ False __.

Clause 218.10 **Abnormal operation** **Pass**

Method(s):
The fan with integral batteries or detachable battery pack is to be placed on a soft wood surface covered by two layers of tissue paper; and covered by one layer of cheese cloth. The tests are to be conducted with the battery pack fully charged and the on-off switch fully actuated. Following fault conditions applied one at a time.

[X] The terminals of a removable battery pack with exposed terminals are to be shorted.
[X] A short is to be introduced in any accessible cord between the fan and charger.
[X] A short circuit is introduced between the fan and a separable battery pack.
[X] The polarity of a removable/replaceable battery pack is reversed.

[X] One shot, non-resettable thermal cut-outs and overload devices may operate during the above tests. In this case, the same test is to be repeated two more times, using two additional samples confirming the same result will be obtained in each test.

The conditions above are to be maintained until ultimate results occur, using one fully charged fan or pack. A new sample may be used for each test.

Result(s):
During the tests, there was no charring or burning of the cheesecloth or tissue paper. True _X_ False __.

Clause 218.11 **Battery venting test** **N/A**

Method(s):

A fully charged battery pack with all protective devices defeated shall be immersed in a container of non-conductive oil initially at room temperature. The batteries are to then be discharged by short circuiting the battery terminals. Operation shall be continued until ultimate results.

Result(s):

There was controlled venting of the battery	True _X_ False __.
During the tests, there was no rupturing or distortion of the battery case(s).	True _X_ False __.
There was no expulsion of the battery electrolyte.	True _X_ False __.

Clause 223.2 Ultraviolet radiation test N/A

Method(s):

The product was energized at rated voltage and the controls (including user movable parts, shields, and guides etc.) were adjusted to the level that results in the greatest amount of ultraviolet light emanating from the product.

The test was conducted in a dark windowless room that has black radiation barriers to minimize reflections and stray light

[ ] In the as received condition

[ ] After the enclosure impact test of the Standard for Polymeric Materials - Use in Electrical Equipment Evaluations, UL 746C

[ ] After the guard impact test of Section 61

[ ] After the drop test of Section 70

[ ] All removable parts, such as lenses, filters and covers, that are user-serviceable were removed from the product if their removal results in an increase in the amount of ultraviolet radiation exposure to the user.

Result(s):

The product employing ultraviolet lamps did not emit radiation in excess of 0.1 μW/cm^2 True __ False __. beyond its enclosure

Pictures

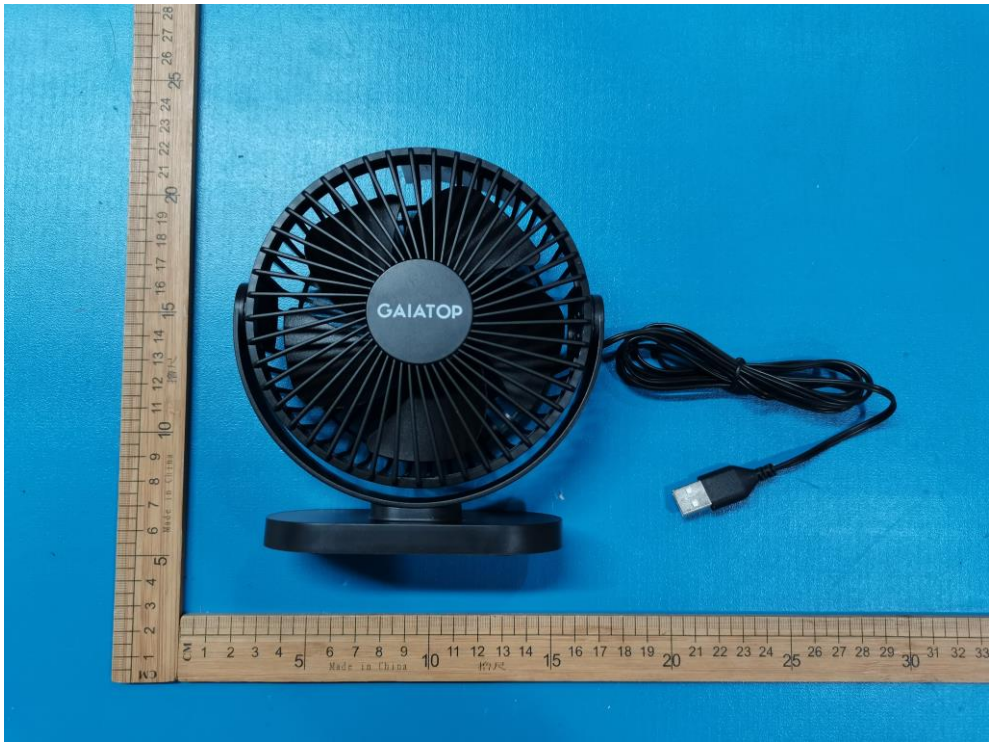


Photo 1 Overall view_1

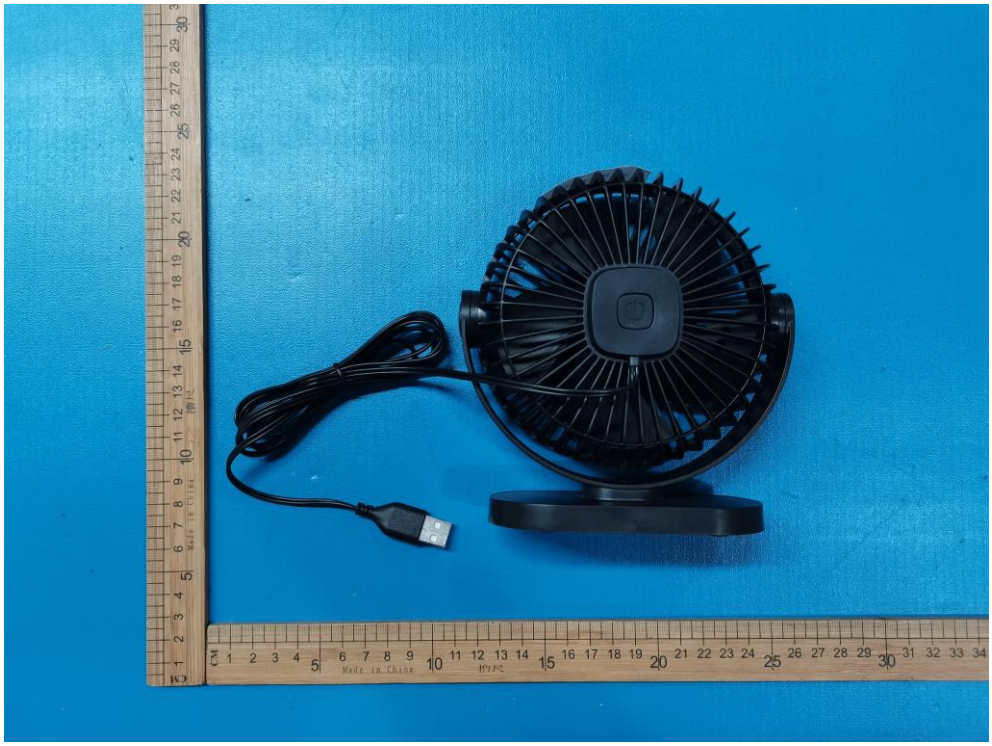


Photo 2 Overall view_2

Pictures

Photo 3 Overall view_3

Photo 4 Overall view_4

Pictures

Photo 5 Overall view_5

Photo 6 Internal view_1

Pictures

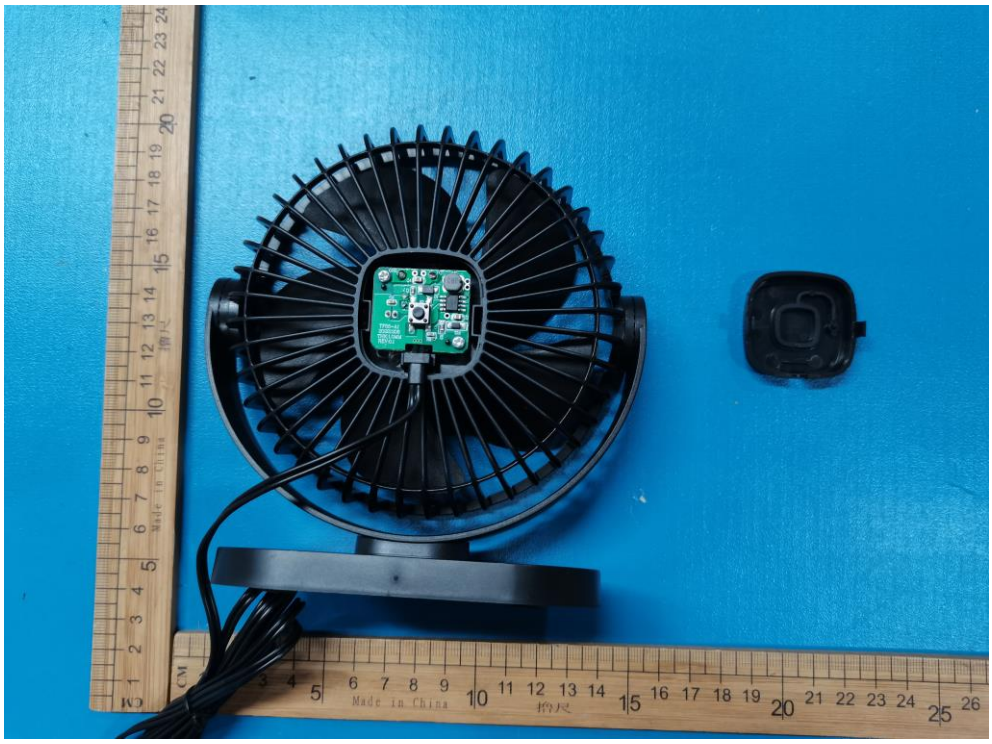


Photo 7 Internal view_2

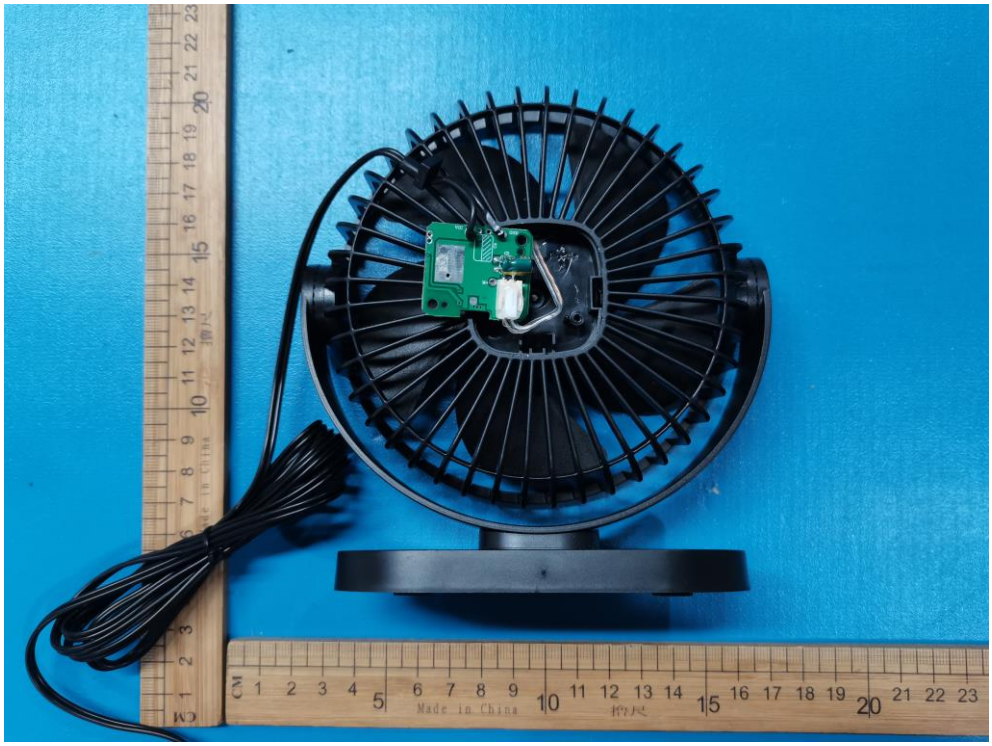


Photo 8 Internal view_3

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