A constant temperature chamber includes a cavity, a first fan, and a second fan. The cavity includes a first side, a second side, a third side, and a fourth side. The first and second sides are oriented towards each other in a first direction. The third and fourth sides are oriented towards each other in a second direction which is different from the first direction. The first side defines a plurality of first vents, the second side defines a plurality of second vents, the third side defines a plurality of third vents, and the fourth side defines a plurality of fourth vents. The first fan includes a first air inlet and a first air outlet. The first air inlet is in communication with one of the first or second vents. The first air outlet is in communication with the other one of first or second vents. The second fan includes a second air inlet and a second air outlet. The second air inlet is in communication with one of the third or fourth vents. The second air outlet is in communication with the other one of third or fourth vents.
CONSTANT TEMPERATURE CHAMBER

BACKGROUND

[0001] 1. Technical Field

[0002] The present disclosure relates to a constant temperature chamber, more particularly to a self-adjusting constant temperature chamber for testing performance characteristics of an electrical device at different environmental temperatures.

[0003] 2. Description of Related Art

[0004] Hot property is a sort of important property for an electrical device such as computer, server, notebook and so on. Hot property reflects an operation state of the electrical device in different temperature environments. When hot property of an electrical device is tested, a simulation temperature environment is needed. Traditionally, a constant temperature chamber is designed for testing an electrical device placed therein. The temperature in the constant temperature chamber can be adjusted within a range of necessary temperatures. Consequently, the constant temperature chamber provides a kind of simulation temperature environment for testing the electrical device.

[0005] In fact, in a realistic running environment, temperature of every part of the electrical device is approximately uniform. However, if the constant temperature chamber cannot simulate a real temperature environment, the test for hot property of the electrical device is of no effect. For adjusting a temperature in the constant temperature chamber, the constant temperature chamber is equipped with a heat generation apparatus and airflow assembly. The heat generation apparatus generates heat. The airflow assembly drives air flowing to diffuse the heat in the constant temperature chamber to keep all positions in the constant temperature chamber in a constant temperature. However, in the conventional constant temperature chamber, the airflow assembly drives the air flowing in a single direction, which can not diffuse the heat well.

[0006] Therefore, there is room for improvement within the art to provide a power supply system for computers which can simultaneously save boot-up time and power.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Many aspects of the embodiments can be better understood with references to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the embodiments. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

[0008] FIG. 1 is an isometric view of a constant temperature chamber in accordance with one embodiment.

[0009] FIG. 2 is similar to FIG. 1, but viewed from another aspect.

[0010] FIG. 3 is an exploded and isometric view of an airflow assembly of the constant temperature chamber of FIG. 1.

[0011] FIG. 4 is an assembly view of the airflow assembly of FIG. 3.

[0012] FIG. 5 is a sectional view taken along line V-V of FIG. 4.

DETAILED DESCRIPTION

[0013] The disclosure is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings in which like references indicate similar elements. It should be noted that references to “an” or “one” embodiment in this disclosure are not necessarily to the same embodiment, and such references mean at least one.

[0014] Referring to FIGS. 1 to 3, a constant temperature chamber 10 in accordance with an embodiment defines a cavity 30 therein. An airflow assembly 40 is mounted in the constant temperature chamber 10. An electronic device 50 is mounted in the cavity 30 of the constant temperature chamber 10 to be tested.

[0015] The cavity 30 has a first side 31, a second side 32, a third side 33, and a fourth side 34. The first and second sides 31 and 32 are oriented towards each other in a vertical direction, and the third and fourth sides 33 and 34 are oriented towards each other in a horizontal direction. The first side 31 defines a plurality of first vents 311. A center portion of the second side 32 forms a location position 325. Peripheral portion of the location portion 325 defines a plurality of second vents 312. The third side 33 defines a plurality of third vents 331 thereon. The fourth side 34 defines a plurality of fourth vents 341 thereon.

[0016] The airflow assembly 40 includes a first fan 41, a second fan 42, a receiving frame 43, four air ducts 45, and two shield pieces 47. The receiving frame 43 is capable of mounting the first fan 41 and second fan 42 therein.

[0017] The first fan 41 includes a first air inlet 411 and a first air outlet 412. The second fan 42 includes a second air inlet 421 and a second air outlet 422.

[0018] The receiving frame 43 is approximately cube shaped. The receiving frame 43 defines a receiving room 431 capable of receiving the first fan 41 and second fan 42 therein. Four openings 432 are defined in two opposite sides of the receiving frame 43, and are in communication with the receiving room 431. Edge of each opening 432 extends outwards from the receiving frame 43 to form a flange 433 on the receiving frame 43.

[0019] Each air duct 45 is capable of being secured to the flange 433 to be mounted on the receiving frame 43. The air ducts 45 are used to guide airflow to specific positions of the constant temperature chamber 10.

[0020] Referring to FIGS. 1 to 5, in assembly of the airflow assembly 40, the first and second fans 41 and 42 are placed in the receiving room 431. The two shield pieces 47 are secured on both sides of the receiving room 431 to mount and secure the two fans 41 and 42 in the receiving room 431. The first air inlet 411 of the first fan 41 faces to one of the four openings 432, and the first air outlet 412 of the first fan 41 faces towards the opposite direction. The second air inlet 421 of the second fan 42 faces to one of the four openings 432, and the second air outlet 422 of the second fan 42 faces towards the opposite direction. The four air ducts 45 are secured on the four flanges 433 of the receiving frame 43 to align with the first and second air inlets and outlets 411,412, 421, and 422 of the first and the second fans 41 and 42.

[0021] Then, the airflow assembly 40 is mounted in the constant temperature chamber 10. One of the four air ducts 45 which is aligned with the first air inlet 411 of the first fan 41, is communicated with the first vents 311 of the first side 31. One of the four air ducts 45 which is aligned with the first air outlet 412 of the first fan 41, is communicated with the second vents 321 of the second side 32. One of the four air ducts 45 which is aligned with the second air inlet 421 of the second fan 42, is communicated with the third vents 331 of the third side 33. One of the four air ducts 45 which is aligned with the second air outlet 422 of the second fan 42, is communicated with the fourth vents 341 of the fourth side 34.
When the constant temperature chamber is in operation, the first and second fans circulate airflow. Airflow flows through the air ducts into the cavity in two different directions, so heat can be well diffused in the cavity.

It is to be understood, however, that even though numerous characteristics and advantages of the embodiments have been set forth in the foregoing description, together with details of the structure and function of the embodiments, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the present disclosure to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A constant temperature chamber, comprising:
   a cavity comprising a first side, a second side, a third side, and a fourth side; the first and second sides oriented towards each other in a first direction; the third and fourth sides oriented towards each other in a second direction, which is different from the first direction; the first side defining a plurality of first vents; the second side defining a plurality of second vents; the third side defining a plurality of third vents; and the fourth side defining a plurality of fourth vents;
   a first fan comprising a first air inlet and a first air outlet, the first air inlet is in communication with one of the first and second vents; and the first air outlet is in communication with the other one of first and second vents; and
   a second fan comprising a second air inlet and a second air outlet, the second air inlet is in communication with one of the third and fourth vents; and the second air outlet of the second fan is in communication with the other one of third and fourth vents.

2. The constant temperature chamber of claim 1, further comprising a receiving frame mounted therein, wherein the first and second fans are mounted in the receiving frame.

3. The constant temperature chamber of claim 2, wherein the receiving frame defines a receiving room in which the first and second fans are received; and the receiving frame defines four openings in communication with the receiving room, and each of the first and second air inlets and outlets is aligned with one opening of the receiving frame.

4. The constant temperature chamber of claim 3, wherein edge of each opening extends outwards from the receiving frame to form a flange on the receiving frame.

5. The constant temperature chamber of claim 4, further comprising four air ducts mounted on flanges of the receiving frame, wherein the four air ducts comprises a first air duct, a second air duct, a third air duct, and a fourth air duct; the first air duct is aligned with the first air inlet and is in communication with the first vents; the second air duct is aligned with the first air outlet and is in communication with the second vents; the third air duct is aligned with the second air inlet and is in communication with the third vents; the fourth air duct is aligned with the second air outlet and is in communication with the fourth vents.

6. The constant temperature chamber of claim 3, wherein two shield pieces are secured on two sides of the receiving room to mount and secure the first and second fans in the receiving room.

7. The constant temperature chamber of claim 1, wherein a center portion of the second side forms a location position, and the second vents are defined in peripheral portion of the location position.

8. A constant temperature chamber, comprising:
   a cavity comprising a first side, a second side, a third side, and a fourth side; the first side and second side oriented to each other in a first direction; and the third side and fourth side oriented to each other in a second direction which is different from the first direction; and
   an airflow assembly mounted in the constant temperature chamber, the airflow assembly capable of driving air flowing between the first side and second side in the first direction, and flowing between the third side and fourth side in the second direction simultaneously.

9. The constant temperature chamber of claim 8, wherein the first side defines a plurality of first vents, the second side defines a plurality of second vents, and the third side defines a plurality of third vents, and the fourth side defines a plurality of fourth vents; the airflow assembly comprises a first fan and a second fan, the first fan comprises a first air inlet and a first air outlet; the second fan comprises a second air inlet and a second air outlet; the first air inlet is in communication with one of the first and second vents, the first air outlet is in communication with the one of the third and fourth vents, and the second air outlet is in communication with the other one of first and second vents; the second air inlet is in communication with one of the third and fourth vents, and the second air outlet is in communication with the other one of third and fourth vents.

10. The constant temperature chamber of claim 9, further comprising a receiving frame mounted therein, wherein the first and second fans are mounted in the receiving frame.

11. The constant temperature chamber of claim 10, wherein the receiving frame defines a receiving room in which the first and second fans are received; and the receiving frame defines four openings in communication with the receiving room, and each of the first and second air inlets and outlets is aligned with one opening of the receiving frame.

12. The constant temperature chamber of claim 11, wherein edge of each opening extends outwards from the receiving frame to form a flange on the receiving frame.

13. The constant temperature chamber of claim 12, further comprising four air ducts mounted on flanges of the receiving frame, wherein the four air ducts comprises a first air duct, a second air duct, a third air duct, and a fourth air duct; the first air duct is aligned with the first air inlet and is in communication with the first vents; the second air duct is aligned with the first air outlet and is in communication with the second vents; the third air duct is aligned with the second air inlet and is in communication with the third vents; the fourth air duct is aligned with the second air outlet and is in communication with the fourth vents.

14. The constant temperature chamber of claim 11, wherein two shield pieces are secured on two sides of the receiving room to mount and secure the first and second fans in the receiving room.

15. The constant temperature chamber of claim 9, wherein a center portion of the second side forms a location position, and the second vents are defined in peripheral portion of the location position.

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