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(54) **FLOOD LIGHT STRUCTURE**

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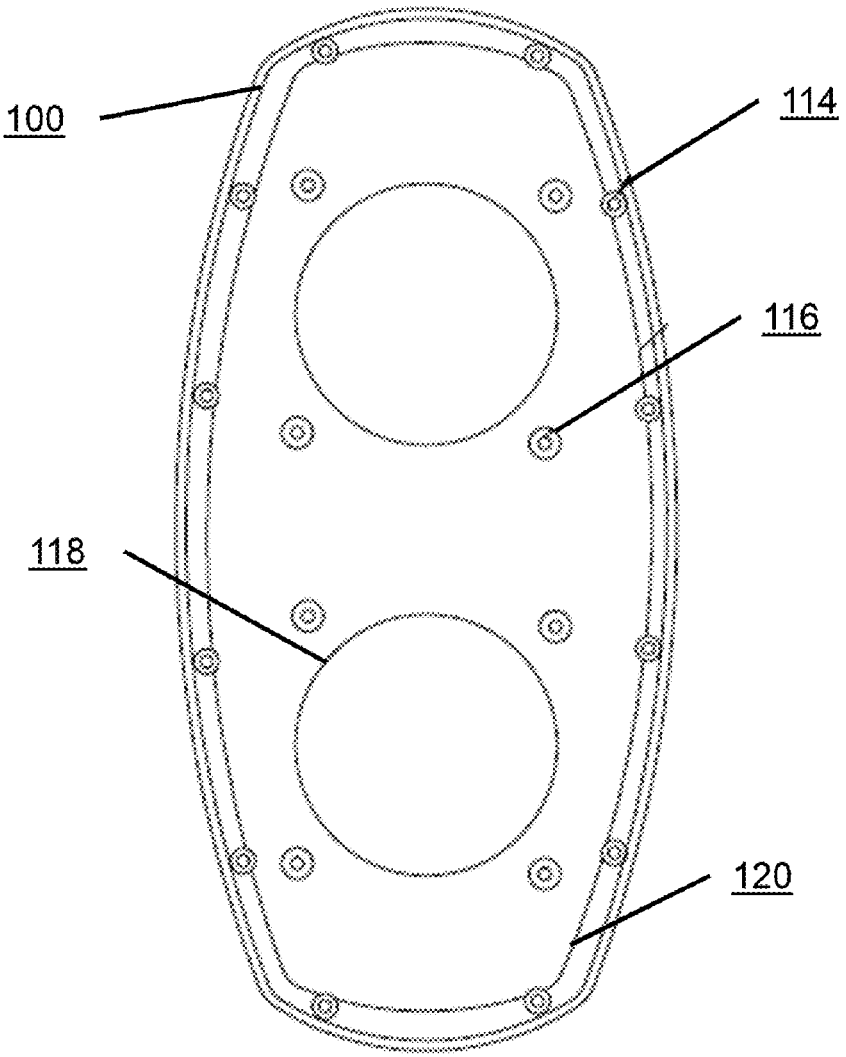
(57) **ABSTRACT**

The present disclosure provides a flood light structure for one or more flood lights. The flood light structure includes an assembly of a physical supporting base positioned in the flood light structure. The assembly is constructed with a plurality of substances. In addition, the flood light structure includes an insulation layer. The insulation layer is longitudinally disposed over a surface of each of one or more printed circuit board. Moreover, the flood light structure includes one or more light emission element securely mounted on surface of each of the one or more printed circuit board through the insulation layer. Further, the physical supporting base includes one or more printed circuit board. Each of the one or more printed circuit board has a metal core. Also, a thermal conductivity associated with each of the one or more printed circuit board is in a range of 0.5-3 W/Mk.



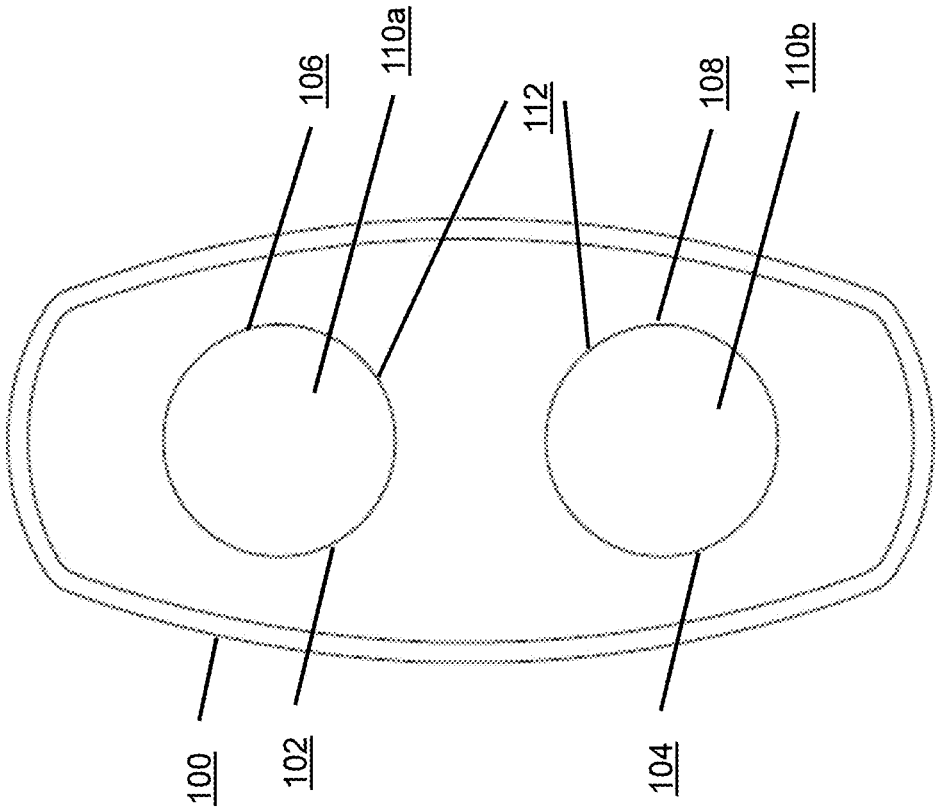


FIG. 1A

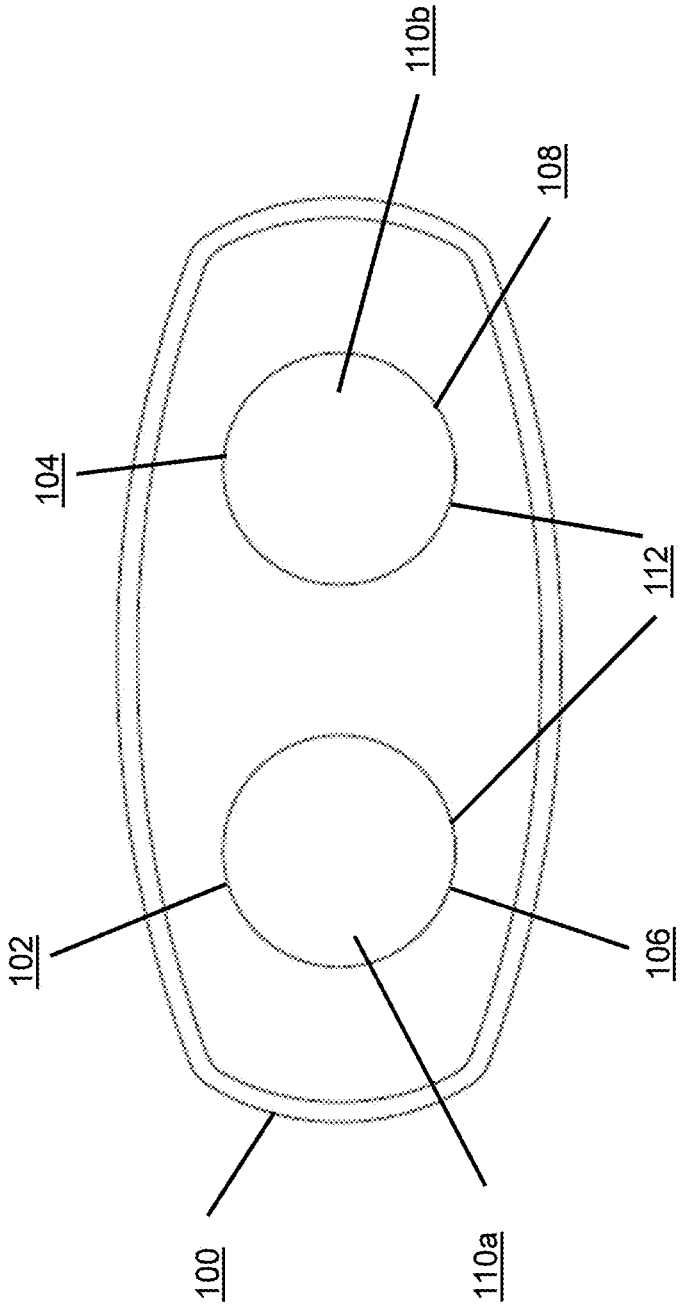


FIG. 1A

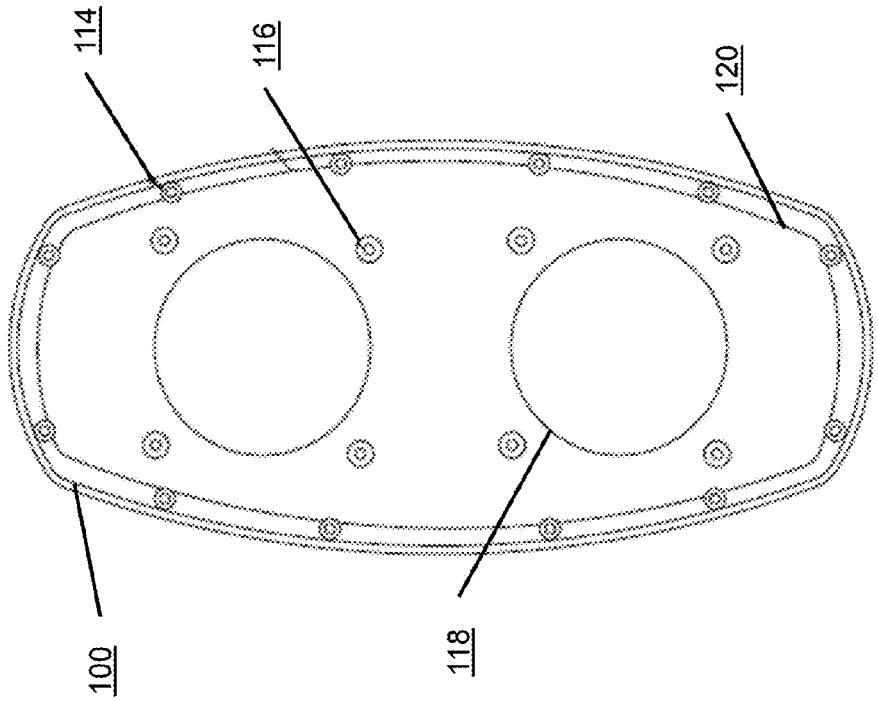


FIG. 1B

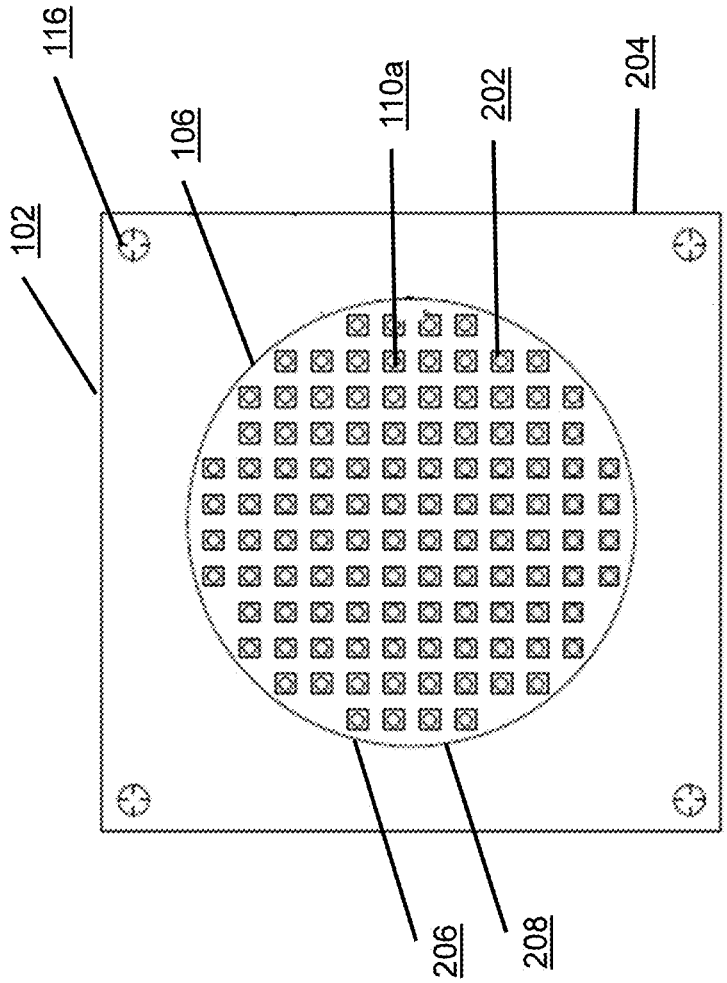


FIG. 2

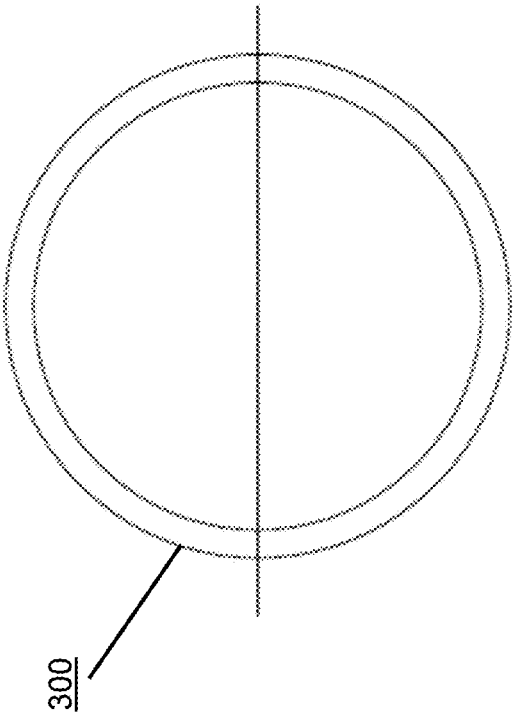


FIG. 3

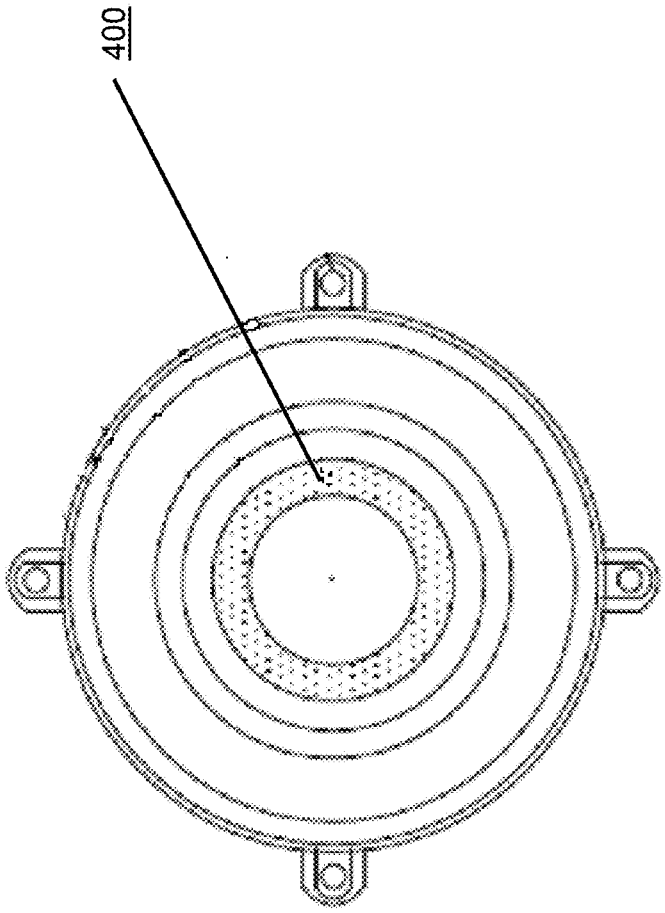


FIG. 4

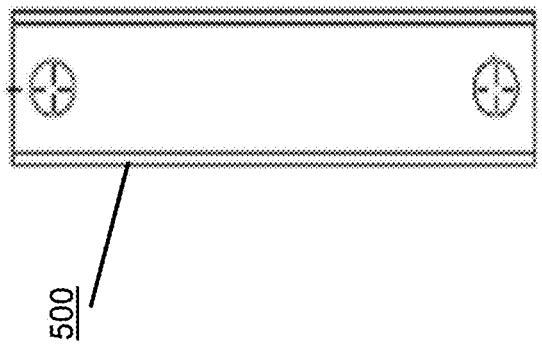


FIG. 5A

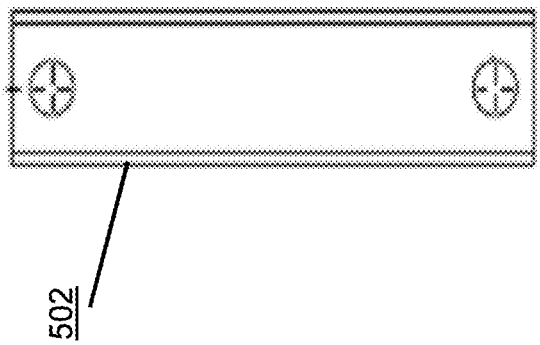


FIG. 5B

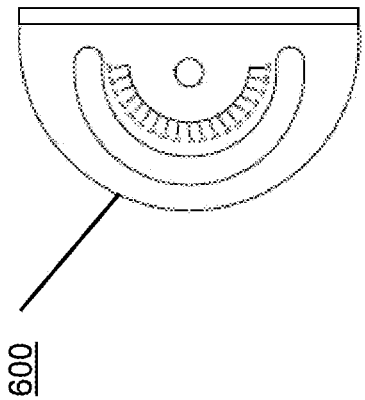


FIG. 6A

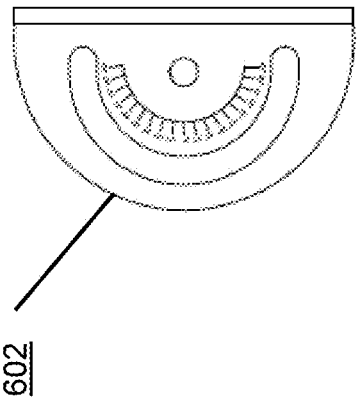


FIG. 6B

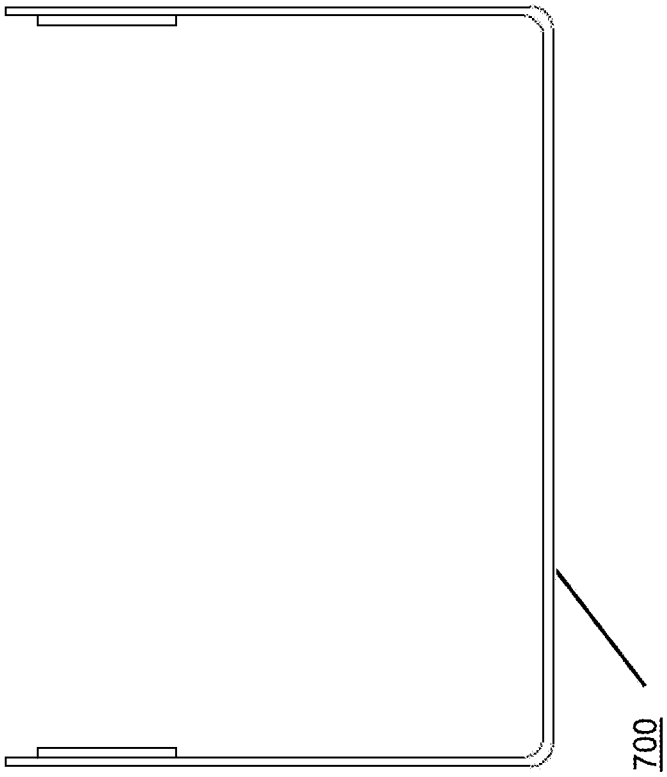


FIG. 7

FLOOD LIGHT STRUCTURE

TECHNICAL FIELD

[0001] The present disclosure relates to the field of flood light structures. More specifically, the present disclosure relates to utilization of light emitting diodes in the flood light structure.

BACKGROUND

[0002] In an emerging era of rapid development in electronic technology, advancement in product design, appearance, and more obvious sophisticated electronic components used in the products is observed. A continuous development is recognized in field of light emitting diodes (hereinafter 'LED') too. Generally, these features are reflected in packing density of the LEDs to have enhanced seismic capability, high reliability, and improved production efficiency.

[0003] Nowadays, the LEDs are mounted on a Printed Circuit Board (hereinafter 'PCB') substrate. These designs provide a comparable superiority over previously designed LEDs. The LEDs which are mounted on the PCB substrate try to meet high precision, high efficiency and high reliability requirements. Further, it is easy to implement automation in these structures. Moreover, an emerging trend of development of these assemblies results in saving of energy and longer life time. This is due to its increased efficiency. Moreover, these LED assemblies possess environmental benefits too. Due to these benefits, the structures having the LEDs mounted on the PCB substrate is in a great demand today and finds many applications. Various applications of such structures include but may not be limited to lighting of fields during low lighting conditions and lighting during live performances on stage shows. Also, various applications of such structures include lighting on bridges, under tunnels, buildings, showrooms, street lighting and the like.

[0004] However, present LED housings increases lumen maintenance and durability of the LEDs only up to an extent. The present housings fail to provide considerable lumen maintenance on further increasing the packing density of the LEDs. Further, the present LED housings increases junction temperature of the LEDs on increasing the packing density of the LEDs. The junction temperature is highest operating temperature of a semiconductor in an electronic device. More particularly, the junction temperature of LEDs is its highest operating temperature in the LED housing. The increased junction temperature drastically affects the lumen maintenance of the LEDs. For example, if a new LED housing has a considerable junction temperature (say, in a range of 75-80 degree Celsius) and sufficient lumen maintenance, its lumen maintenance is expected to decrease in future. In addition, the present LED housings tend to reduce its thermal management capabilities over a period of time.

[0005] In light of the above stated discussion, there is a need for a flood light structure that could overcome the above stated disadvantages. Further, the flood light structure should possess significant lumen maintenance even on increasing the packing density of the LEDs in the LED housing. Furthermore, the flood light structure should possess a longer durability of the LEDs. In addition, the flood light structure should come up with a more compact design. Moreover, the flood light structure should reduce the junction temperature of the LEDs even on increasing the compactness and the packing density of the LEDS.

SUMMARY

[0006] In an aspect of the present disclosure, the present disclosure provides a flood light structure for one or more flood lights. The flood light structure is powder coated. The flood light structure includes an assembly of a physical supporting base positioned in the flood light structure. The assembly is constructed with a plurality of substances. In addition, the flood light structure includes an insulation layer. The insulation layer is longitudinally disposed over a surface of each of one or more printed circuit board. Moreover, the flood light structure includes one or more light emission element securely mounted on surface of each of the one or more printed circuit board through the insulation layer. Further, the physical supporting base includes one or more printed circuit board. Each of the one or more printed circuit board has a metal core. The one or more printed circuit board is mounted parallel to each other. Also, a thermal conductivity associated with each of the one or more printed circuit board is in a range of 0.5-3 W/Mk. The insulation layer provides protection to each of the one or more printed circuit board. Furthermore, a thermal conductivity of the insulation layer is in a range of 0.5-9 W/Mk. The insulation layer is a ceramic non-conductive layer. Each of the one or more light emission arrangements includes a plurality of light emitting diodes. In addition, each of the one or more light emission arrangements is configured to emit light in a uniform direction substantially parallel to the one or more printed circuit board. The plurality of light emitting diodes is connected to the corresponding one or more printed circuit board through a plurality of holes. Also, each of the plurality of light emitting diodes has density in a range of 2.17-2.2 pieces per square centimeters. Each of the plurality of light emitting diodes possesses a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W. Moreover, increased lumen maintenance of the plurality of light emitting diodes is achieved by optimization of a junction temperature associated with the plurality of light emitting diodes. The junction temperature is optimized in a pre-determined range of 65-70 degree Celsius.

[0007] In an embodiment of the present disclosure, a printed circuit board of the one or more printed circuit board is internally linked to another printed circuit board of the one or more printed circuit board in the flood light structure.

[0008] In an embodiment of the present disclosure, the printed circuit board of the one or more printed circuit board operates separately from the another printed circuit board of the one or more printed circuit board in the flood light structure. The flood light structure possesses a correlated color temperature of 5000 Kelvin.

[0009] In an embodiment of the present disclosure, the flood light structure further includes one or more power supplying devices attached to the flood light structure through the one or more printed circuit board. The one or more power supplying devices is configured for powering up the one or more light emission arrangements by supplying an aggregate power of 400-450 W. Each of the one or more printed circuit board receives equal amount of power.

[0010] In an embodiment of the present disclosure, the plurality of substances for the construction of the one or more printed circuit board includes at least one of an aluminium substrate, one or more tinned copper tracks and white mask.

[0011] In an embodiment of the present disclosure, each of the one or more light emission arrangements includes a first

pre-defined amount of sequential arrangements of the plurality of light emitting diodes. In addition, each of the one or more light emission arrangements includes a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes. Further, the first pre-defined amount is sixteen. Furthermore, the second pre-determined amount is seven. The plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

[0012] In an embodiment of the present disclosure, the insulation layer is greased with a thermal paste to transfer dissipated heat to a heat sink.

[0013] In an embodiment of the present disclosure, each of the plurality of light emitting diodes is arranged longitudinally on each of the one or more printed circuit board.

[0014] In another aspect of the present disclosure, the present disclosure provides a flood light structure for one or more flood lights. The flood light structure is powder coated. The flood light structure includes an assembly of a physical supporting base positioned optimally in the flood light structure. In addition, the flood light structure includes an insulation layer. The insulation layer is placed in a longitudinal direction over a length on each of the one or more printed circuit board. Further, the flood light structure includes one or more light emitting sources connected to the corresponding one or more printed circuit board through the plurality of holes. Furthermore, the flood light housing includes one or more power supplying sources. The one or more power supplying sources is electrically coupled to each of the one or more light emitting sources. The one or more power supplying sources supply an aggregate power of 400-450 W to power up the one or more light emitting sources. In addition, the physical supporting base includes one or more printed circuit board. Each of the one or more printed circuit board has a metal core. The one or more printed circuit board is mounted parallel to each other. Also, a thermal conductivity associated with each of the one or more printed circuit board is in a range of 0.5-3 W/Mk. Further, each of the one or more printed circuit board includes a fixing arrangement. The fixing arrangement includes a plurality of holes. The plurality of holes is fixed on each of the one or more printed circuit board. Also, each of the plurality of holes is placed along a boundary of the flood light structure and corners of the one or more printed circuit board. In addition, the fixing arrangement includes a metallic substrate wired with one or more tinned copper tracks. The metallic substrate is made of aluminium. Moreover, the insulation layer provides protection to each of the one or more printed circuit board. Also, a thermal conductivity of the insulation layer is in a range of 0.5-9 W/Mk. The insulation layer is a ceramic non-conductive layer. Further, each of the one or more light emitting sources includes a plurality of light emitting diodes. Each of the one or more light emitting sources is longitudinally placed apart from each other. Also, each of the one or more light emitting diodes is bonded with the metallic substrate via the insulation layer. Each of the plurality of light emitting diodes has density in a range of 2.17-2.2 pieces per square centimeters. Further, each of the plurality of light emitting diodes possesses a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W. In addition, each of the one or more light emitting sources receives an equal amount of power. Also, increased lumen maintenance of the plurality of light emitting diodes is achieved by optimization of a junction temperature associated with the plurality of light emitting diodes. The optimized junction temperature is in a range of 65-70 degree Celsius.

[0015] In an embodiment of the present disclosure, each of the one or more light emitting sources includes a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes. In addition, each of the one or more light emitting sources includes a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes. Further, the first pre-defined amount is sixteen. Furthermore, the second pre-determined amount is seven. The plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

[0016] In an embodiment of the present disclosure, the insulation layer is greased with a thermal paste to transfer dissipated heat to a heat sink.

[0017] In an embodiment of the present disclosure, each of the plurality of light emitting diodes protrudes in a vertical direction on each of the one or more printed circuit board.

[0018] In an embodiment of the present disclosure, a printed circuit board of the one or more printed circuit board is internally linked to another printed circuit board of the one or more printed circuit board in the flood light structure.

[0019] In an embodiment of the present disclosure, the printed circuit board of the one or more printed circuit board operates separately from the another printed circuit board of the one or more printed circuit board in the flood light structure. The flood light structure possesses a correlated color temperature of 5000 Kelvin.

[0020] In yet another aspect of the present disclosure, the present disclosure provides a flood light structure for one or more flood lights. The flood light structure is powder coated. The flood light structure includes an assembly of a physical supporting base being positioned optimally in the flood light structure. In addition, the flood light structure includes an insulation layer. The insulation layer is longitudinally placed over a length on each of one or more printed circuit board. Further, the flood light structure includes one or more light emitting apparatus connected to the corresponding one or more printed circuit board through the plurality of holes. Furthermore, the flood light structure includes a transparent cover. In addition, the flood light structure includes one or more power feeding arrangements configured to supply an aggregate power of 400-450 W to light up the one or more light emitting apparatus. Moreover, the physical supporting base includes the one or more printed circuit board. Each of the one or more printed circuit board has a metal core. The one or more printed circuit board is mounted parallel to each other. Also, a thermal conductivity associated with each of the one or more printed circuit board is in a range of 0.5-3 W/Mk. In addition, each of the one or more printed circuit board includes a fixing arrangement. The fixing arrangement includes a plurality of holes. The plurality of holes is fixed on each of the one or more printed circuit board. Also, each of the plurality of holes is placed along a boundary of the flood light structure. Further, the fixing arrangement includes a metallic substrate wired with one or more tinned copper tracks. The metallic substrate is made of aluminium. Moreover, the insulation layer provides protection to each of the one or more printed circuit board. Also, a thermal conductivity of the insulation layer is in a range of 0.5-9 W/Mk. The insulation layer is a ceramic non-conductive layer. In addition, each of the one or more light emitting apparatus includes the plurality of light emitting diodes.

Each of the one or more light emitting apparatus is longitudinally placed apart from each other. Also, each of the one or more light emitting diodes is bonded with the metallic substrate via the insulation layer. Moreover, each of the plurality of light emitting diodes has density in a range of 2.17-2.2 pieces per square centimeters. Each of the plurality of light emitting diodes possesses a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W. Furthermore, the transparent cover encloses the flood light structure. In addition, a plurality of illuminating heads of each of the plurality of light emitting diodes face towards the transparent cover in a vertical direction. Each of the one or more light emitting apparatus receives an equal amount of power. Further, increased lumen maintenance of the plurality of light emitting diodes is achieved by optimization of a junction temperature associated with the plurality of light emitting diodes. The optimized junction temperature is in a range of 65-70 degree Celsius.

[0021] In an embodiment of the present disclosure, each of the one or more light emitting apparatus includes a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes. In addition, each of the one or more light emitting apparatus includes a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes. Further, the first pre-defined amount is sixteen. Furthermore, the second pre-determined amount is seven. The plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

[0022] In an embodiment of the present disclosure, the insulation layer is greased with a thermal paste to transfer dissipated heat to a heat sink.

[0023] In an embodiment of the present disclosure, each of the plurality of light emitting diodes protrudes in a vertical direction on each of the one or more printed circuit board. The flood light structure possesses a correlated color temperature of 5000 Kelvin.

[0024] In an embodiment of the present disclosure, the transparent cover is made of aluminium di-casting alloys.

[0025] In an embodiment of the present disclosure, the flood light housing further includes one or more reflectors disposed on the one or more printed circuit board. Each of the one or more reflectors is configured to reflect light emitting from each of the plurality of light emitting diodes. In addition, the one or more reflectors include a top reflector and a bottom reflector.

BRIEF DESCRIPTION OF THE FIGURES

[0026] Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0027] FIG. **1**A illustrates a flood light structure, in accordance with various embodiments of the present disclosure;

[0028] FIG. **1**B illustrates an inner view of the flood light structure, in accordance with various embodiments of the present disclosure;

[0029] FIG. **2** illustrates a metal core printed circuit board, in accordance with various embodiments of the present disclosure;

[0030] FIG. **3** illustrates a structural element of the flood light structure, in accordance with various embodiments of the present disclosure;

[0031] FIG. **4** illustrates a reflector, in accordance with various embodiments of the present disclosure;

[0032] FIG. **5**A illustrates a first clamp, in accordance with various embodiments of the present disclosure;

[0033] FIG. **5**B illustrates a second clamp, in accordance with various embodiments of the present disclosure;

[0034] FIG. **6**A illustrates a third clamp, in accordance with various embodiments of the present disclosure;

[0035] FIG. **6**B illustrates a fourth clamp, in accordance with various embodiments of the present disclosure; and

[0036] FIG. **7** illustrates a holding bracket, in accordance with various embodiments of the present disclosure.

DETAILED DESCRIPTION

[0037] In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present technology. It will be apparent, however, to one skilled in the art that the present technology can be practiced without these specific details. In other instances, structures and devices are shown in block diagram form only in order to avoid obscuring the present technology.

[0038] Reference in this specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present technology. The appearance of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Moreover, various features are described which may be exhibited by some embodiments and not by others. Similarly, various requirements are described which may be requirements for some embodiments but not other embodiments.

[0039] Moreover, although the following description contains many specifics for the purposes of illustration, anyone skilled in the art will appreciate that many variations and/or alterations to said details are within the scope of the present technology. Similarly, although many of the features of the present technology are described in terms of each other, or in conjunction with each other, one skilled in the art will appreciate that many of these features can be provided independently of other features. Accordingly, this description of the present technology is set forth without any loss of generality to, and without imposing limitations upon, the present technology.

[0040] FIG. **1**A illustrates a flood light structure **100** for one or more flood lights, in accordance with various embodiments of the present disclosure. The flood light structure is powder coated. Moreover, the flood light structure **100** is a casing and/or an enclosure for one or more flood lights. The one or more flood lights are broad-beamed and high-intensity artificial lights. In addition, the one or more flood lights illuminate outdoor playing fields when an outdoor sports event is being held during low-light conditions and stages during live performances. The live performances include concerts, plays and the like.

[0041] In addition, the flood light structure **100** includes an assembly of a physical supporting base. The assembly is positioned in the flood light structure **100**. Also, the assembly is constructed with a plurality of substances. The plurality of substances includes an aluminium substrate, one or more tinned copper tracks and white mask. Moreover, the physical supporting base includes a printed circuit board **102** and printed circuit board **104**. Further, the printed circuit

board **102** and the printed circuit board **104** have a metal core. Also, the printed circuit board **102** and the printed circuit board **104** are mounted parallel to each other.

[0042] The printed circuit board **102-104** mechanically supports and electrically connects various electronic components by utilizing conductive tracks, pads and other features which are laminated onto a non-conductive substrate. The flood light structure **100** is made of aluminium di-casting (hereinafter 'ADC') alloys. In an embodiment of the present disclosure, the flood light structure **100** is made of ADC **12**.

[0043] The printed circuit board **102-104** is a metallic board that can bear large mechanical loads, high temperature, high level of dimensional stability and the like. In an embodiment of the present disclosure, the printed circuit board **102-104** is a tecrona coated metal core board (metal core TC-2). The metal core printed circuit board **102-104** posses an increased thermal conductivity up to 3 W/Mk. The thermal conductivity is a property of the printed circuit board **102-104** to conduct heat.

[0044] Going further, the printed circuit board **102** includes a light emission arrangement **106** and the printed circuit board **104** includes a light emission arrangement **108**. The light emission arrangement **106-108** is securely mounted on surface of each of the printed circuit board **102-104**. Also, the light emission arrangement **106-108** is configured to emit light in a uniform direction substantially parallel to the printed circuit board **102-104**. Further, the light emission arrangement **106** includes a plurality of light emitting diodes **110***a* and the light emission arrangement **108** includes a plurality of light emitting diodes **110***b*.

[0045] The plurality of light emitting diodes **110***a-b* is connected to the corresponding printed circuit board **102-104** through a plurality of holes. Furthermore, the plurality of light emitting diodes **110***a-b* possesses a density in a range of 2.17-2.2 pieces per square centimeters. The plurality of light emitting diodes **110***a-b* is a two-terminal semiconductor light source. The plurality of light emitting diodes **110***a-b* is a p-n junction diode that emits light when activated.

[0046] In an embodiment of the present disclosure, the plurality of light emitting diodes **110***a-b* includes light emitting diodes of 5000 Kelvin. In an embodiment of the present disclosure, the plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin. Moreover, number of the plurality of light emitting diodes **110***a-b* in the light emitting arrangement **106-108** are 224. In an embodiment of the present disclosure, the plurality of light emitting diodes **110***a-b* are arranged vertically on each of the printed circuit board **102-104**. The plurality of light emitting diodes **110***a-b* in the light emitting arrangement **106-108** in the corresponding metal core printed circuit board **102-104** possess a thermal resistance having a value not more than 9 m^2K/W.

[0047] Moreover, each of the light emission arrangement **106-108** includes a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes **110***a-b*. In addition, each of the emission arrangement **106-108** includes a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes **110***a-b*. In an embodiment of the present disclosure, the first pre-defined amount is sixteen. In another embodiment of the present disclosure, the second pre-defined amount is seven.

[0048] In an embodiment of the present disclosure, the printed circuit board **102** is internally linked to the printed circuit board **104** in the flood light structure **100**. In another embodiment of the present disclosure, the printed circuit board **102** operates separately from the printed circuit board **104** in the flood light structure **100**. Moreover, the flood light structure **100** optimizes junction temperature of the plurality of light emitting diodes **110***a-b* in a range of 65-70 degree Celsius. Moreover, the junction temperature is optimized to increase lumen maintenance of the plurality of light emitting diodes **110***a-b* (described in detailed description of FIG. **1**B).

[0049] Going further, the flood light structure **100** includes an insulation layer **112**. The insulation layer is longitudinally disposed over a surface of printed circuit board **102-104**. In an embodiment of the present disclosure, the insulation layer **112** is spread on each of the metal core printed circuit board **102-104**. Also, the insulation layer **112** provides protection to the printed circuit board **102-104**. Further, the light emitting arrangement **106-108** is bonded to each of the metal core printed circuit board **102-104** via an insulation layer **112**. In addition, thermal conductivity of the insulation layer **112** is in a range of 0.5-9 W/Mk. The insulation layer is a ceramic non-conductive layer.

[0050] In addition, the flood light structure **100** includes one or more power supplying devices attached to the flood light structure **100** through the printed circuit board **102-104**. The one or more power supplying devices power up the light emission arrangement **106-108**. The one or more power supplying devices supply an aggregate power of 400-450 W to the light emission arrangement **106-108**. In an embodiment of the present disclosure, each printed circuit board **102-104** receives equal amount of power.

[0051] It may be noted that in FIG. **1**A, the flood light structure **100** includes the printed circuit board **102-104**; however, those skilled in the art would appreciate that the flood light structure **100** may include one or more metal core printed circuit board. It may also be noted that in FIG. **1**A, the flood light structure **100** includes the light emitting arrangement **110***a* on the printed circuit board **102** and the light emitting arrangement **110***b* on the metal core printed circuit board **104**; however those skilled in the art would appreciate that the flood light structure **100** may have more number of light emitting arrangements on the printed circuit board **102-104**.

[0052] FIG. **1**B illustrates an inner view of the flood light structure **100**, in accordance with various embodiments of the present disclosure. It may be noted that to explain structural elements of FIG. **1**B, references will be made to the structural elements of FIG. **1**A. The flood light structure **100** includes the assembly of the physical supporting base. The physical supporting base includes the printed circuit board **102-104**. Moreover, the printed circuit board **102-104** is positioned optimally in the flood light structure **100**. The printed circuit board **102-104** includes a fixing arrangement **114**. The fixing arrangement **114** includes a plurality of holes **116** which are fixed on each of the metal core printed circuit board **102-104**. The plurality of holes **116** connects/fixes the light emission arrangement **106-108** on the corresponding printed circuit board **102-104**.

[0053] In another embodiment of the present disclosure, the fixing arrangement **114** fixes the printed circuit board **102-104** in the flood light structure **100**. The fixing arrangement **114** includes a plurality of bolts, a plurality of screws and a plurality of gaskets for fixing the light emission arrangement **106-108** on the corresponding printed circuit board **102-104**. In addition, the fixing arrangement **114**

includes a plurality of nuts and connectors for fixing the light emission arrangement **106-108** on the corresponding printed circuit board **102-104**. In an embodiment of the present disclosure, the fixing arrangement **114** includes the plurality of bolts, the plurality of screws and the plurality of gaskets for fixing the printed circuit board **102-104** in the flood light structure **100**. In another embodiment of the present disclosure, the fixing arrangement **114** includes the plurality of nuts and connectors for fixing the metal core printed circuit board **102-104** in the flood light structure **100**.

[0054] Moreover, each of the light emission arrangement **106-108** includes a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes **110***a-b*. In addition, each of the emission arrangement **106-108** includes a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes **110***a-b*. In an embodiment of the present disclosure, the first pre-defined amount is sixteen. In another embodiment of the present disclosure, the second pre-defined amount is seven. In an embodiment of the present disclosure, the plurality of light emitting diodes **110***a-b* are arranged perpendicularly to a longitudinal axis of the printed circuit board **102-104**. Further, the printed circuit board **102-104** includes a metallic substrate wired with one or more tinned copper tracks. The metallic substrate is made of aluminium.

[0055] Further, the light emitting arrangement **106-108** of the flood light structure **100** is bonded with the each of the metal core printed circuit board **102-104** via the corresponding insulation layer **112**. In addition, the flood light structure **100** includes one or more power supplying sources. In an embodiment of the present disclosure, the one or more power supplying sources refer to the one or more power supplying devices (illustrated in detailed description of FIG. **1**A).

[0056] The one or more power supplying sources is electrically coupled to the light emission arrangement **106-108**. The one or more power supplying sources supplies the aggregate power of 400-450 W to the light emission arrangement **106-108**. In an embodiment of the present disclosure, the input power needed by the flood light structure **100** is in a range of 380-385 Watts. In an embodiment of the present disclosure, voltage needed by the one or more power supplying sources is in a range of 27-54 Volts. In an embodiment of the present disclosure, current passing through the flood light structure **100** is in a range of 3-4 Volts.

[0057] The flood light structure **100** utilizes the printed circuit board **102-104** to reduce the junction temperature. The thermal conductivity of the printed circuit board **102-104** is up to 3 W/Mk (as explained above). In addition, the flood light structure **100** lowers the junction temperature of the plurality of light emitting diodes **110***a-b* by utilization of one or more parameters of the plurality of light emitting diodes **110***a-b*. The one or more parameters include density and thermal resistance. In addition, the density of the plurality of light emitting diodes **110***a-b* is in the range of 2.17-2.2 pieces per square centimeters. The value of the thermal resistance of the plurality of light emitting diodes **110***a-b* is not more than 9 m^2K/W. In an embodiment of the present disclosure, the optimized value of the junction temperature is in the range of 65-70 degree Celsius. The optimized value of the junction temperature increases lumen maintenance and durability of the plurality of light emitting diodes **110***a-b*.

[0058] Further, the insulation layer **112** is greased with a thermal paste to transfer dissipated heat to a heat sink. In an embodiment of the present disclosure, amount of thermal paste used is 0.05 Kilograms.

[0059] In addition, the flood light structure **100** includes one or more reflectors disposed on the printed circuit board **102-104** (as illustrated in detail description of FIG. **4**). Each of the one or more reflectors is configured to reflect light emitting from each of the plurality of light emitting diodes **110***a-b*. In an embodiment of the present disclosure, the one or more reflectors include a top reflector and a bottom reflector. Each of the light emitting arrangement **106-108** includes the top reflector and the bottom reflector. In an embodiment of the present disclosure, the one or more reflectors are made of a mixture of 60 percent of polycarbonate and 40 percent of acrylonitirile-butadiene-styrenel.

[0060] Further, the flood light structure **100** includes a transparent cover **120**. The transparent cover **120** is a top cover. The transparent cover **120** encloses the flood light structure **100**. In addition, a plurality of illuminating heads of each of the plurality of light emitting diodes **110***a-b* face towards the transparent cover **120** in a vertical direction. Moreover, the top cover **120** is made from an aluminium di-casting alloy. The aluminium di-casting alloy is an alloy made from di-casting of the aluminium metal. The di-casting is a process that forces a molten metal (herein 'aluminium') into a mold cavity by application of high pressure.

[0061] In an embodiment of the present disclosure, the flood light structure **100** includes a plurality of washers. The plurality of washers includes one or more plain washers and one or more spring washers. The plurality of washers creates a bright flood of colorful lights and makes the plurality of light emitting diodes **110***a-b* water resistant.

[0062] In addition, input voltage applied to the flood light structure **100** is in a range of 90-305 Volts. The plurality of light emitting diodes **110***a-b* will glow when the input voltage is near to threshold value of the plurality of light emitting diodes **110***a-b*. In an embodiment of the present disclosure, the threshold of the plurality of light emitting diodes **110***a-b* is less than 10 percent. Also, the correlated cooler temperature of the plurality of light emitting diodes **110***a-b* is 5000 Kelvin.

[0063] The forward voltage of the plurality of light emitting diodes **110***a-b* is 2.9-3.2 Volts. The forward voltage is a voltage drop across each of the plurality of light emitting diodes **110***a-b* if voltage at anode is more positive than voltage at cathode. The forward current of the plurality of light emitting diodes **110***a-b* is 0.492 Ampere. The forward current is a current which flows across each of the plurality of light emitting diodes **110***a-b* from the anode to the cathode. The forward current flows from the anode to the cathode so that each of the plurality of light emitting diodes **110***a-b* receives a sufficient current to operate and function.

[0064] It may be noted that in FIG. **1**B, the fixing arrangement **114** is utilized to connect/fix the light emission arrangement **106-108** on each of the printed circuit board **102-104**; however, those skilled in the art would appreciate that there may be more fixing arrangements that can be utilized to connect/fix the light emitting arrangement **106-108** on each of the printed circuit board **102-104**.

[0065] It may be noted that in FIG. **1**B, the fixing arrangement **114** is utilized to fix each of the printed circuit board **102-104** in the flood light structure **100**; however those skilled in the art would appreciate that there may be more

fixing arrangements that can be utilized to fix each of the printed circuit board **102-104** in the flood light structure **100**.

[0066] FIG. **2** illustrates the printed circuit board **102** with the metal core, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **2**, references will be made to the structural elements of FIG. **1**A and FIG. **1**B.

[0067] The printed circuit board **102** resides in the flood light structure **100**. The printed circuit board **102** includes the lighting emission arrangement **106**. Further, the printed circuit board **102** includes the fixing arrangement **114**. The plurality of holes **116** of the fixing arrangement **114** fixes the light emission arrangement **106** on the printed circuit board **102**. Furthermore, the printed circuit board **102** includes the metallic substrate **118** (as illustrated in the detailed description of FIG. **1**A and FIG. **1**B). The lighting emission arrangement **106** is bonded to the printed circuit board **102** via the insulation layer **112** (as described in detailed description of FIG. **1**A and FIG. **1**B). Furthermore, the lighting emission arrangement **106** includes the plurality light emitting diodes **110***a*. In an embodiment of the present disclosure, the plurality of light emitting diodes **110***a* is arranged vertically on the printed circuit board **102**.

[0068] In addition, a plurality of illuminating heads **202** of each of the plurality of light emitting diodes **110***a-b* face towards the transparent cover **120** in a vertical direction. Furthermore, a power feeding arrangement **204** of the one or more power supplying sources supplies a power of 200 Watts to the plurality of light emitting diodes **110***a* of the lighting emitting arrangement **106**. The power feeding arrangement **204** is electrically coupled to the light emitting arrangement **106**. In addition, the light emission arrangement **106** includes the first pre-defined amount of sequential arrangements of the plurality of light emitting diodes **110***a*. In addition, the light emission arrangement **106** includes the second pre-defined amount of lateral arrangements of the plurality of light emitting diodes **110***a*. Further, the first pre-defined amount is sixteen. Furthermore, the second pre-determined amount is seven. In addition, a top reflector **206** and a bottom reflector **208** of the one or more reflectors reflect the light emitting from each of the plurality of light emitting diodes **110***a* (as illustrated in detail description of FIG. **4**).

[0069] It may be noted that in FIG. **2**, the plurality of illuminating heads **202**, the power feeding arrangement **204**, the top reflector **206** and the bottom reflector **208** are described corresponding to the printed circuit board **102**; however, those skilled in the art would appreciate that a plurality of illuminating heads, a power generating arrangement, a top reflector and a bottom reflector can be described corresponding to the printed circuit board **104**.

[0070] FIG. **3** illustrates a structural element of the flood light structure **100**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **3**, references will be made to the structural elements of FIG. **1**A, FIG. **1**B and FIG. **2**. The FIG. **3** illustrates a glass **300**. The glass **300** encloses each of the printed circuit board **102-104**. The glass **300** is a borosilicate glass. The borosilicate glass is has silica and boron trioxide as main constituents. The borosilicate glass has low coefficient of thermal expansion that makes the glass **300** resistant to thermal shock and thermal stress. In an embodiment of the present disclosure, the glass **300** has a coefficient of thermal expansion in a range of ~3×10^{-6}/C at 20 degree Celsius. The low coefficient of thermal expansion of the glass **300** increases the lumen maintenance of the plurality of light emitting diodes **110***a-b*.

[0071] In an embodiment of the present disclosure, diameter of the glass **300** is in a range of 5 millimeters to 5.5 millimeters. The glass **300** is positioned on top of each of the light emission arrangement **106-108**. Moreover, the glass **300** is fixed into the transparent cover **120** of the printed circuit board **102-104**. In an embodiment of the present disclosure, the glass **300** can withstand rapid temperature variations. Moreover, when subjected to uneven temperature variations, the glass **300** tends to crack into larger pieces rather than shattering.

[0072] FIG. **4** illustrates a reflector **400**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **4**, references will be made to the structural elements of FIG. **1**A, FIG. **1**B, FIG. **2** and FIG. **3**. In an embodiment of the present disclosure, the reflector **400** may be the top reflector **206** and/or the bottom reflector **208**. The reflector **400** surrounds each of the light emission arrangement **106-108**. The reflector **400** reflects the light emitting from each of the plurality of light emitting diodes **110***a-b*.

[0073] The reflector **400** is made of the mixture of **60** percent of the polycarbonate and **40** percent of the acrylonitirile-butadiene-styrenel. Due to this material, the reflector **400** provides resilience even at low temperatures. Further, the reflector **400** has improved impact resistance, toughness, and heat resistance. In an embodiment of the present disclosure, the reflector **400** may be mounted to the flood light structure **100**. In another embodiment of the present disclosure, the reflector **400** may be mounted to a heat collector. In yet another embodiment of the present disclosure, the reflector **400** may be glued to the printed circuit board **102-104**. In yet another embodiment of the present disclosure, the reflector **400** may be glued on an additional bayonet on module.

[0074] It may be noted that in FIG. **4**, the reflector **400** surrounds each of the light emission arrangement **106-108**; however, those skilled in the art would appreciate that the reflector **400** may surround the flood light structure **100**.

[0075] FIG. **5**A illustrates a first clamp **500**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **5**A, references will be made to the structural elements of FIG. **1**A, FIG. **1**B, FIG. **2**, FIG. **3** and FIG. **4**. The first clamp **500** is a U-shaped clamp. The first clamp **500** is connected to the light emission arrangement **106**. In an embodiment of the present disclosure, the first clamp **500** is made of zinc coated steel.

[0076] It may be noted that in FIG. **5**A, the first clamp **500** is the U-shaped clamp; however, those skilled in the art would appreciate that the first clamp **500** may have any other shape known in the art which could connect the first clamp **500** easily to the light emitting arrangement **106**.

[0077] It may also be noted that in FIG. **5**A, the first clamp **500** is connected to the light emission arrangement **106**; however, those skilled in the art would appreciate that one or more clamps may be connected to the light emission arrangement **106**.

[0078] FIG. **5**B illustrates a second clamp **502**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **5**B, references will be made to the structural elements

of FIG. **1**A, FIG. **1**B, FIG. **2**, FIG. **3**, FIG. **4** and FIG. **5**A. The second clamp **502** is the U-shaped clamp. The second clamp **502** is connected to the light emission arrangement **108**. In an embodiment of the present disclosure, the second clamp **502** is made of zinc coated steel.

[0079] It may be noted that in FIG. **5**B, the second clamp **502** is the U-shaped clamp; however, those skilled in the art would appreciate that the second clamp **502** may have any other shape known in the art which could connect the first clamp **500** easily to the light emission arrangement **108**.

[0080] It may also be noted that in FIG. **5**B, the second clamp **502** is connected to the light emission arrangement **108**; however, those skilled in the art would appreciate that the one or more clamps may be connected to the light emission arrangement **108**.

[0081] FIG. **6**A illustrates a third clamp **600**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **6**A, references will be made to the structural elements of FIG. **1**A, FIG. **1**B, FIG. **2**, FIG. **3**, FIG. **4**, FIG. **5**A and FIG. **5**B. The third clamp **600** is an angle clamp. The third clamp **600** is connected to the light emission arrangement **106**. In an embodiment of the present disclosure, the third clamp **600** is made of zinc coated steel.

[0082] It may be noted that in FIG. **6**A, the third clamp **600** is connected to the light emission arrangement **106**; however, those skilled in the art would appreciate that one or more angle clamps may be connected to the light emission arrangement **106**.

[0083] FIG. **6**B illustrates a fourth clamp **602**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **6**B, references will be made to the structural elements of FIG. **1**A, FIG. **1**B, FIG. **2**, FIG. **3**, FIG. **4**, FIG. **5**A, FIG. **5**B and FIG. **6**A. The fourth clamp **602** is the angle clamp. The fourth clamp **602** is connected to the light emission arrangement **108**. In an embodiment of the present disclosure, the fourth clamp **602** is made of zinc coated steel.

[0084] It may be noted that in FIG. **6**B, the fourth clamp **602** is connected to the light emission arrangement **108**; however, those skilled in the art would appreciate that the one or more angle clamps may be connected to the light emission arrangement **108**.

[0085] FIG. **7** illustrates a holding bracket **700**, in accordance with various embodiments of the present disclosure. It may be noted that to explain the structural elements of FIG. **7**, references will be made to the structural elements of FIG. **1**A, FIG. **1**B, FIG. **2**, FIG. **3**, FIG. **4**, FIG. **5**A, FIG. **5**B, FIG. **6**A and FIG. **6**B. The holding bracket **700** holds the flood light structure **100**. In an embodiment of the present disclosure, the holding bracket **700** is made of zinc coated steel. In an embodiment of the present disclosure, the holding bracket **700** is a U-shaped bracket utilized for providing support to the flood light structure **100**.

[0086] It may be noted that in FIG. **7**, the holding bracket **700** is the U-shaped bracket; however those skilled in the art would appreciate that the holding bracket **700** may have any other shape known in the art which could be utilized for providing support to the flood light structure **100**.

[0087] The flood light structure **100** has several advantages. The flood light structure **100** possesses significant lumen maintenance even on increased packing density of the plurality of light emitting diodes **110***a-b*. Further, the flood light structure **100** possesses a longer durability. In addition, the flood light structure **100** has a more compact design. Moreover, the flood light structure **100** reduces the junction temperature of the plurality of light emitting diodes **110***a-b* even on increasing the compactness and the packing density of the plurality of light emitting diodes **110***a-b*. Further, the flood light structure **100** requires the reduced forward voltage and the forward current. Furthermore, the flood light structure **100** possesses enhanced thermal management.

[0088] The foregoing descriptions of specific embodiments of the present technology have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the present technology to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the present technology and its practical application, to thereby enable others skilled in the art to best utilize the present technology and various embodiments with various modifications as are suited to the particular use contemplated. It is understood that various omissions and substitutions of equivalents are contemplated as circumstance may suggest or render expedient, but such are intended to cover the application or implementation without departing from the spirit or scope of the claims of the present technology.

[0089] While several possible embodiments of the invention have been described above and illustrated in some cases, it should be interpreted and understood as to have been presented only by way of illustration and example, but not by limitation. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments.

What is claimed is:

1. A flood light structure for one or more flood lights, the flood light structure being powder coated, the flood light structure comprising:

an assembly of a physical supporting base being positioned in the flood light structure, the assembly being constructed with a plurality of substances, wherein the physical supporting base comprises one or more printed circuit board having a metal core, wherein the one or more printed circuit board being mounted parallel to each other and wherein a thermal conductivity associated with each of the one or more printed circuit board being in a range of 0.5-3 W/Mk;

an insulation layer, the insulation layer being longitudinally disposed over a surface of each of the one or more printed circuit board, wherein the insulation layer provides protection to each of the one or more printed circuit board, wherein a thermal conductivity of the insulation layer being in a range of 0.5-9 W/Mk and wherein the insulation layer being a ceramic non-conductive layer; and

one or more light emission arrangements being securely mounted on surface of each of the one or more printed circuit board through the insulation layer, wherein each of the one or more light emission arrangements comprises a plurality of light emitting diodes, wherein each of the one or more light emission arrangements being configured to emit light in a uniform direction substantially parallel to the one or more printed circuit board, wherein the plurality of light emitting diodes being connected to the corresponding one or more printed circuit board through a plurality of holes, wherein each

of the plurality of light emitting diodes having density in a range of 2.17-2.2 pieces per square centimeters, and wherein each of the plurality of light emitting diodes possess a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W,

wherein an increased lumen maintenance of the plurality of light emitting diodes being achieved by optimization of a junction temperature associated with the plurality of light emitting diodes in a pre-determined range of 65-70 degree Celsius.

2. The flood light structure as recited in claim **1**, wherein a printed circuit board of the one or more printed circuit board being internally linked to another printed circuit board of the one or more printed circuit board in the flood light structure.

3. The flood light structure as recited in claim **1**, wherein the printed circuit board of the one or more printed circuit board operates separately from the another printed circuit board of the one or more printed circuit board in the flood light structure.

4. The flood light structure as recited in claim **1**, further comprising one or more power supplying devices attached to the flood light structure through the one or more printed circuit board, the one or more power supplying devices being configured for powering up the one or more light emission arrangements by supplying an aggregate power of 400-450 W and wherein each of the one or more printed circuit board receives equal amount of power.

5. The flood light structure as recited in claim **1**, wherein the plurality of substances for the construction of the one or more printed circuit board comprises at least one of an aluminium substrate, one or more tinned copper tracks and white mask.

6. The flood light structure as recited in claim **1**, wherein each of the one or more light emission arrangements comprises a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes and a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes, wherein the first pre-defined amount being sixteen and wherein the second pre-defined amount being seven and wherein the plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

7. The flood light structure as recited in claim **1**, wherein the insulation layer being greased with a thermal paste to transfer dissipated heat to a heat sink.

8. The flood light structure as recited in claim **1**, wherein each of the plurality of light emitting diodes being arranged longitudinally on each of the one or more printed circuit board.

9. A flood light structure for one or more flood lights, the flood light structure being powder coated, the flood light structure comprising:

an assembly of a physical supporting base being positioned optimally in the flood light structure, wherein the physical supporting base comprises one or more printed circuit board having a metal core, wherein the one or more printed circuit board being mounted parallel to each other, wherein a thermal conductivity associated with each of the one or more printed circuit board being in a range of 0.5-3 W/Mk, wherein each of the one or more printed circuit board comprises:

a fixing arrangement comprising a plurality of holes, wherein the plurality of holes being fixed on each of the one or more printed circuit board; wherein each of the plurality of holes being placed along a boundary of the flood light structure and corners of the one or more printed circuit board and

a metallic substrate wired with one or more tinned copper tracks, wherein the metallic substrate being made of aluminium;

an insulation layer, the insulation layer being longitudinally placed over a length on each of the one or more printed circuit board, wherein the insulation layer provides protection to each of the one or more printed circuit board, wherein a thermal conductivity of the insulation layer being in a range of 0.5-9 W/Mk and wherein the insulation layer being a ceramic non-conductive layer;

one or more light emitting sources connected to the corresponding one or more printed circuit board through the plurality of holes, wherein each of the one or more light emitting sources comprises a plurality of light emitting diodes, wherein each of the one or more light emitting sources being longitudinally placed apart from each other, wherein each of the one or more light emitting diodes being bonded with the metallic substrate via the insulation layer, wherein each of the plurality of light emitting diodes having density in a range of 2.17-2.2 pieces per square centimeters and wherein each of the plurality of light emitting diodes possess a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W; and

one or more power supplying sources electrically coupled to each of the one or more light emitting sources, the one or more power supplying sources being configured for powering up the one or more light emitting sources by supplying an aggregate power of 400-450 W and wherein each of the one or more light emitting sources receives equal amount of power,

wherein an increased lumen maintenance of the plurality of light emitting diodes being achieved by optimization of a junction temperature associated with the plurality of light emitting diodes in a range of 65-70 degree Celsius.

10. The flood light structure as recited in claim **9**, wherein each of the one or more light emitting sources comprises a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes and a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes, wherein the first pre-defined amount being sixteen and wherein the second pre-defined amount being seven and wherein the plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

11. The flood light casing as recited in claim **9**, wherein the insulation layer being greased with a thermal paste to transfer dissipated heat to a heat sink.

12. The flood light casing as recited in claim **9**, wherein each of the plurality of light emitting diodes protrude in a vertical direction on each of the one or more printed circuit board.

13. The flood light casing as recited in claim **9**, wherein a printed circuit board of the one or more printed circuit board being internally linked to another printed circuit board of the one or more printed circuit board in the flood light structure.

14. The flood light casing as recited in claim **9**, wherein the printed circuit board of the one or more printed circuit

board operates separately from the another printed circuit board of the one or more printed circuit board in the flood light structure and wherein the flood light structure possesses a correlated color temperature of 5000 Kelvin.

15. A flood light structure for one or more flood lights, the flood light structure being powder coated, the flood light structure comprising:

an assembly of a physical supporting base being positioned optimally in the flood light structure, wherein the physical supporting base comprises one or more printed circuit board having a metal core, wherein the one or more printed circuit board being mounted parallel to each other, wherein a thermal conductivity associated with each of the one or more printed circuit board being in a range of 0.5-3 W/Mk, wherein each of the one or more printed circuit board comprises:

a fixing arrangement comprising a plurality of holes, wherein the plurality of holes being fixed on each of the one or more printed circuit board; wherein each of the plurality of holes being placed along a boundary of the flood light structure and corners of the one or more printed circuit board and

a metallic substrate wired with one or more tinned copper tracks, wherein the metallic substrate being made of aluminium;

an insulation layer, the insulation layer being longitudinally placed over a length on each of the one or more printed circuit board, wherein the insulation layer provides protection to each of the one or more printed circuit board, wherein a thermal conductivity of the insulation layer being in a range of 0.5-9 W/Mk and wherein the insulation layer being a ceramic non-conductive layer;

one or more light emitting apparatus connected to the corresponding one or more printed circuit board through the plurality of holes, wherein each of the one or more light emitting apparatus comprises a plurality of light emitting diodes, wherein each of the one or more light emitting apparatus being longitudinally placed apart from each other, wherein each of the one or more light emitting diodes being bonded with the metallic substrate via the insulation layer, wherein each of the plurality of light emitting diodes having density in a range of 2.17-2.2 pieces per square centimeters and wherein each of the plurality of light emitting diodes possess a thermal resistance in a pre-determined range of 4.0-6.0 m^2K/W; and

a transparent cover, wherein the transparent cover encloses the flood light structure and wherein a plurality of illuminating heads of each of the plurality of light emitting diodes face towards the transparent cover in a vertical direction; and

one or more power feeding arrangements configured for powering up the one or more light emitting apparatus by supplying an aggregate power of 400-450 W and wherein each of the one or more light emitting apparatus receives equal amount of power,

wherein an increased lumen maintenance of the plurality of light emitting diodes being achieved by optimization of a junction temperature associated with the plurality of light emitting diodes in a range of 65-70 degree Celsius.

16. The flood light structure as recited in claim **15**, wherein each of the one or more light emitting apparatus comprises a first pre-defined amount of sequential arrangements of the plurality of light emitting diodes and a second pre-defined amount of lateral arrangements of the plurality of light emitting diodes, wherein the first pre-determined amount being sixteen and wherein the second pre-determined amount being seven and wherein the plurality of light emitting diodes possesses a correlated color temperature of 5000 Kelvin.

17. The flood light structure as recited in claim **15**, wherein the insulation layer being greased with a thermal paste to transfer dissipated heat to a heat sink.

18. The flood light structure as recited in claim **15**, wherein each of the plurality of light emitting diodes protrude in a vertical direction on each of the one or more printed circuit board and wherein the flood light structure possesses a correlated color temperature of 5000 Kelvin.

19. The flood light structure as recited in claim **15**, wherein the transparent cover being made of aluminium di-casting alloys.

20. The flood light casing as recited in claim **15**, further comprising one or more reflectors disposed on the one or more printed circuit board, wherein each of the one or more reflectors being configured to reflect light emitting from each of the plurality of light emitting diodes and wherein the one or more reflectors comprises a top reflector and a bottom reflector.

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