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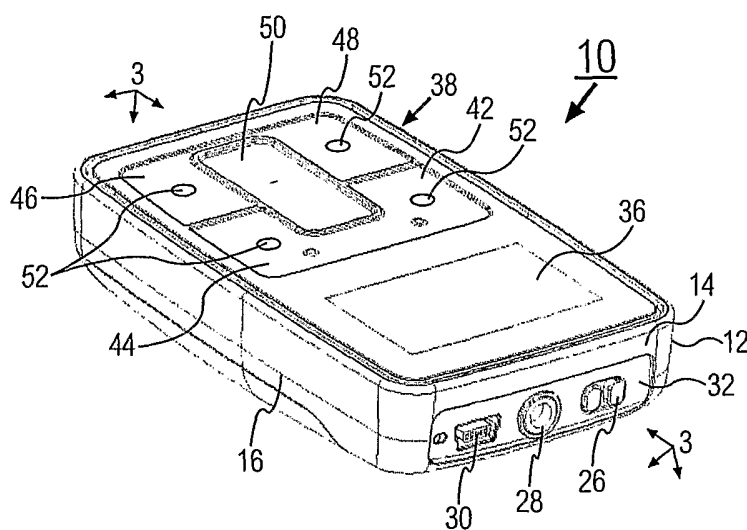
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(54) Title: PORTABLE DEVICE WITH ILLUMINATION AND METHOD THEREFOR



(57) Abstract: A portable device comprising a body (12), at least one wall (24) of the body being of a translucent material and having an outer surface, an inner surface (64) and an outer edge surface (68) and an outer peripheral edge surface. The outer surface (68) is coated with a first non-translucent material (70), there being a plurality of outer openings (23) in the first non-translucent material to form a plurality of control indications (52). The inner surface (64) is coated with a second non-translucent material (76), there being at least one inner opening in the second non-translucent material for at least one light source (66). The first non-translucent coating and the second non-translucent coating cause internal reflection within the at least one wall except for the outer openings and the outer peripheral edge (74) through which light from the at least

one light source is able to pass.

**PORTABLE DEVICE WITH ILLUMINATION AND METHOD THEREFOR****Field of Invention**

This invention relates to a portable device with illumination, and a method for varying illumination of a portable device.

**Background to the Invention**

Portable devices such as, for example, media players, MP3 players, mobile/cellular telephones, PDAs, and the like, often have manually operable controls as well as display screens such as LCD screens. Often the controls are not illuminated. Also, even if illuminated, the illumination has only two states – on and off.

**Summary of the Invention**

In accordance with a first preferred aspect there is provided a portable device comprising a body, at least one wall of the body being of a translucent material and having an outer surface, an inner surface and an outer peripheral edge surface. The outer surface is coated with a first non-translucent material, there being a plurality of outer openings in the first non-translucent material to form a plurality of control indications. The inner surface is coated with a second non-translucent material, there being at least one inner opening in the second non-translucent material for at least one light source. The first non-translucent coating and the second non-translucent coating cause internal reflection within the at least one wall except for the outer openings and the outer peripheral edge surface through which light from the at least one light source is able to pass.

There may also be a power controller for controlling power to the at least one light source, the control being at least one of: increasing power from off to full power when the portable device is activated; decreasing power from full power to off when the portable device is deactivated; and cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power.

According to a second preferred aspect there is provided a portable device comprising a source of power, a power controller, a microprocessor, and a memory. There is also at least one light source for illuminating at least one of: a plurality of control indications and an outer peripheral groove. The power controller controls power to the at least one light source, the control being at least one of: increasing power from off to full power when the portable device is activated; decreasing power from full power to off when the portable device is deactivated; and cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power.

For the second aspect the portable device may further comprise a body, at least one wall of the body being of a translucent material and having an outer surface, an inner surface and the outer peripheral groove. The outer surface may be coated with a first non-translucent material, there being a plurality of outer openings in the first non-translucent material to form a plurality of control indications. The inner surface may be coated with a second non-translucent material, there being at least one inner opening in the second non-translucent material for at least one light source. The first non-translucent coating and the second non-translucent coating may cause internal reflection within the at least one wall except for the control indications and the outer peripheral groove through which light from the at least one light source is able to pass.

For both aspects the increase and decrease in power may both be steady and over a predetermined time. The predetermined time may be 0.5 to 5 seconds, 1 to 3 seconds, or 2.5 seconds. The portable device may further comprise an illuminated display screen, the power controller also controlling power for the illumination of the display screen in the same manner as the at least one light source. The at least one wall may be a top of the body, the display screen being located beneath an opening in first non-translucent coating. The first non-translucent coating and the second non-translucent coating may be different. The plurality control indications may be for a plurality control zones, each control indication being an indication of a function of the control zone. The plurality of light sources may not be aligned with the plurality of control indications. The outer peripheral edges may have a vertical portion and a horizontal portion, at least one of the vertical portion and the horizontal portion not being coated with the first non-translucent coating.

According to a third preferred aspect there is provided a method for controlling illumination of a portable device, the method comprising using a power controller of the portable device to control power supplied to at least one light source for providing the illumination, the control being at least one selected from: increasing power from off to full power when the portable device is activated; decreasing power from full power to off when the portable device is deactivated; and cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power. The increase and decrease in power may both be steady and over a predetermined time. The predetermined time may be 0.5 to 5 seconds, 1 to 3 seconds, or 2.5 seconds. The power controller may also control power for the illumination of a display screen.

For all aspects, the cycle may be to simulate a naturally-occurring cyclic pattern in at least one of: amplitude, and period. The cyclic pattern may be human and may be: heartbeat, and breathing.

#### **Brief Description of the Drawings**

In order that the invention may be fully understood and readily put into practical effect there shall now be described by way of non-limitative example only preferred embodiments of the present invention, the description being with reference to the accompanying illustrative drawings in which:

Figure 1 is a top perspective view of a preferred embodiment;

Figure 2 is an underneath perspective view of the preferred embodiment;

Figure 3 is a vertical cross section along the lines and in the direction of arrows 3-3 on Figure 1;

Figure 4 is two enlarged views of parts of Figure 3;

Figure 5 is a block diagram of the embodiment of Figures 1 to 4;

Figure 6 is a flow chart for the operation of the embodiment of Figure 1 to 5, at start-up;

Figure 7 is a flow chart for the operation of the embodiment of Figures 1 to 5 at shut-down;

Figure 8 is a flow chart for the operation of the embodiment of Figures 1 to 5 during a recharging operation;

Figure 9 is a graphical representation of the power cycle of Figure 8; and

Figure 10 is a graphical representation of a variation of the power cycle of Figure 9.

**Detailed Description of the Preferred Embodiment**

To first refer to Figures 1 and 2 there is shown a portable device 10 that may be one or more of a media player, MP3 player, mobile/cellular telephone, PDA, or the like. As illustrated, it is an MP3 player.

The device 10 has a body 12 comprising four mutually perpendicular side walls 14, 16, 18 and 20; as well as a base 22 and a top 24. At least one of the side walls 14, 16, 18 and 20, the base 22 and the top 24 is made of a translucent material such as, for example, a translucent polycarbonate; whereas the others are preferably non-translucent. In the preferred embodiment shown, the top 24 is of a translucent material. The side walls 14, 16, 18 and 20, and the base 22, are of a non-translucent material.

Mounted in a recess 32 in side wall 14 are an on-off-lock button 26, a connector 28 for headphones/speakers or the like, and an in/out connector 30 such as, for example, a USB or IEEE 1394 port. Recharging may be via the port 30. Base 22 may include a battery compartment cover 34 able to be removed for the insertion and removal of one or more rechargeable batteries 40 (Figure 3).

Mounted beneath top 24 is a display screen 36 such as, for example, an LCD display screen. Top 24 also includes a plurality of control zones generally indicated as 38 and which comprise first control zone 42, second control zone 44, third control zone 47, fourth control zone 48 and fifth control zone 50. The number, nature and function of control zones 42, 44, 46, 48 and 50 will depend on the nature of device 10. As illustrated for an MP3 player, each of the zones 42, 44, 46, 48 and 50 may be for one of: play, skip forward, pause, skip back, stop, scroll, volume up, volume down, menu, enter/select, and so forth.

In each of the first, second, third, and fourth zones 42, 44, 46 and 48 there is a control indication 52 of the functionality of the particular zone. A control indication 52 may be provided in the fifth zone 50, if required or desired. Control indications 52 are preferably shaped appropriately – a right arrow for play, a square for stop, two vertical lines for pause, double arrows with a vertical line for skip, and so forth.

Each zone 42, 44, 46, 48 and 50 may be activated by the presence of a human finger and may therefore include sensors such as, for example, SYNAPTICS® SCROLLSTRIP® sensors available from Synaptics Incorporated of San Jose, California, USA.

The fifth zone 50 may be a touch scrolling zone in accordance with our earlier Singapore patent applications filed 19 July 2004 and 10 September 2004, both for an invention titled "Method and Apparatus for Touch Scrolling", the contents of which are hereby incorporated by reference.

Figures 3 to 5 show that within body 12 is mounted the battery 40, as well as one or more printed circuit boards 53 on which are located a number of components for device 10. The components may include a microprocessor 54, power controller 56, a timing or clock module 58 and non-volatile memory 60 such as, for example, flash memory or a disk drive.

Also mounted within body 12 but below inner surface 64 of top 24 is an upper printed circuit board 62. To upper printed circuit board 62 are mounted the sensors for the control zone 38, as well as at least one, preferably four, light sources 66. The light sources 66 are preferably LEDs of a first colour such as, for example, green, yellow, red, blue, or the like. The first colour is preferably different to the colour of the display screen 36. However, they may be the same.

The top 24 has an outer surface 68 that is coated with a first non-translucent coating 70. The coating is over all of the outer surface 68 but is not over control indications 52 nor at an opening 23 above screen 36. Control indications 52 are appropriately shaped indication openings through coating 70. Outer peripheral side edges 74 of top 24 are not coated with the first non-translucent coating 70.

Inner surface 64 of top 24 is coated with a second non-translucent coating 76 over its entire surface, except for openings 78 and opening 23. Openings 78 are aligned with light sources 66. Preferably, there are recesses 80 in inner surface 66 at openings 78 and into which the light sources at least in part locate, the recesses 80 not being coated with the second non-translucent coating 76. Therefore, light from light sources 66 can enter the top 24 through openings 78 and/or recesses 80. Little light will escape through openings 78 and/or recesses 80 due to their very limited surface area, the presence of the light sources 66 and their support structure, and upper printed circuit board 62.

The outer peripheral edges 74 comprise a vertical portion 75 and a generally horizontal portion 77 which, with walls 14, 16, 18, 20 form a generally U-shaped groove around the outer perimeter of top 24. The generally horizontal portion 77 may be inclined to the horizontal if required or desired. It is preferred that both vertical portion 75 and horizontal portion 77 are not coated with first non-translucent coating 70, but one may be coated. At least one of the vertical portion 75 and the horizontal portion 77 is not coated. Outer peripheral edges 74 form a peripheral region of reduced thickness of top 24.

Non-translucent coatings 70, 76 may be different, if required or desired. They may be painted or printed onto surfaces 64, 68. They may be reflective to assist internal reflection within top 24.

Due to top 24 being made of a translucent material, and coatings 70, 76 being non-translucent, all light emanating from light sources 66 will be reflected by coatings 70, 76 and will thus only be able to emanate from top 24 where there is no non-translucent coating 70, 76. As such light can only pass out of top 24 along the outer peripheral side edges 74 and at the control indications 52. Therefore, whenever light sources 66 are on, the outer, peripheral side edges 74 and the control indications 52 will allow the passage of light and thus be illuminated. By display screen 36 being located immediately beneath opening 23, and due to the display screen operating at the same time as the light sources 66, light from the light sources 66 will not interfere with display screen 36.

Due to the translucent nature of top 24, the limited surface area of outer peripheral edges 74 and control indications 52, and the non-translucent coatings 70,76, relatively low power light sources 66 and/or a relatively small number of light sources 66 may be used yet still provide effective illumination of the outer peripheral edges 74 and control indications 52.

Referring to Figure 5, the microprocessor 54 is operatively connected to the power source – battery 50 – as well as the power controller 56. Power controller 56 controls the power for the illumination of display screen 36, as well as the power for light sources 66. Figure 6 illustrates one way in which the control may be utilized.

When device 10 is started (601) the microprocessor 54 instructs the power controller 56 to commence to power the light sources 66 (602). The power controller 56 steadily increases the power to the light sources 66 (603) until full power is being supplied to light sources 66 (604). The time taken from (602) to (604) is controlled by clock module 58. The time may be pre-set, user set, or user selected from menu options on display screen 36. Preferably, the time is in the range of 0.5 to 5 seconds, more preferably 1 to 3 seconds, and most preferably is 2.5 seconds.

The light sources 66 will consume power therefore a clock count is started (605) as soon as full power is achieved and, after a predetermined period has expired (606, 608) without any zone of control zone 38 being utilized or operated by a user (610, 612), the power to the light sources 66 is reduced (614) until all power to the light sources 66 is off such that the light sources 66 are off (616). The time taken from (614) to (615) is preferably the same as the time for the increasing power to the lights from (602) to (604).

If no (618) at (606), the time count continues (620) until the predetermined time expires. If there has been a user action (622) at (610) the clock count is reset and recommences at (605).

In Figure 7, when a user instructs device 10 to switch off (701), or microprocessor 54 detects no activity for a required, preset period, the power to light sources 66 is reduced (702) until all power is stopped (203) and light sources 66 are off. The device 10 can then switch off (704) or enter standby or sleep mode. Again the time from (701) to (703) is preferably the same as from (602) to (604).

Figure 8 shows the flow when microprocessor 54 detects that a recharger is operatively connected and thus battery 40 is being recharged and/or device 10 is being operated using an external power source such as, for example, mains power or power from a generator.

When recharging/external power commences (801) power starts being supplied to light sources 66 (802). The power is increased (803) until there is full power to light sources 66 and they are fully illuminated (804). The time taken from (802) to (804) is preferably the same as from (602) to (604). Upon full power being achieved at (804), the power is reduced steadily (805) until all power to the lights is off (806) and

the light sources 66 are off. The time from (804) to (806) is preferably the same as from (602) to (604). There may be a pause at (804) so that full power is supplied to the lights 66 for a relatively short period.

A query is then raised (807) to determine if recharging/external power is continuing. If it is (810), the process reverts to (802). If not (808), power to the light sources 66 remains off (809) pending other action such as, for example, the process of Figure 6. The cycle of (802) to (806, 802) is shown graphically in Figure 9. As can be seen, the cycle is rather saw-tooth in appearance. Other wave shapes may be used.

In this way the light sources 66 are illuminated in a regular, cyclic pattern of increasing and diminishing light output simulating naturally-occurring regular cyclic patterns such as, for example, breathing, heartbeat, and so forth. These may be for regularly-occurring human cyclic patterns and may be not only for the period but also the amplitude. As such there may be included portions of relatively constant amplitude during the cycle to match the "pauses" in a natural breathing cycle before exhaling, and before inhaling. This is shown in Figure 10 with the portions of relatively constant amplitude being between (806) and (802) - i.e. before inhaling - and between (804) and (804a) - i.e. before exhaling.

The illumination of the display screen 36 may be included in the cycle of Figures 8 and 9 such that it increases and diminishes with and to the same extent as the light sources 66.

In this way sensors may be located beneath zones 38 and the light sources 66 do not need to be aligned with the control indications 52 and may be not aligned with control indications 52. By having the light sources 66 not aligned with the control indications 52, there is a reflective surface beneath control indications 52 to enhance the light output through control indications 52. As long as the lights from light sources 66 can reach control indications 52 they will be illuminated.

Furthermore the openings 78, the control indications 52 and the outer, peripheral edges 74 are a very small percentage of the overall surface area of top 24 such that they are a trivial portion of the surface area of top 24.

Whilst there has been described in the foregoing description a preferred embodiment of the present invention, it will be understood by those skilled in the technology concerned that many variations or modifications in details of design, construction and operation may be made without departing from the present invention.

**The Claims:**

1. A portable device comprising:
  - (a) a body;
  - (b) at least one wall of the body being of a translucent material and having an outer surface, an inner surface and an outer peripheral edge surface;
  - (c) the outer surface being coated with a first non-translucent material, there being a plurality of outer openings in the first non-translucent material to form a plurality of control indications;
  - (d) the inner surface being coated with a second non-translucent material, there being at least one inner opening in the second non-translucent material aligned with at least one light source;
  - (e) the first non-translucent coating and the second non-translucent coating causing internal reflection within the at least one wall except for the outer openings, and the outer peripheral edge through which light from the at least one light source is able to pass.
2. A portable device as claimed in claim 1, further comprising a power controller for controlling power to the at least one light source, the control being at least one selected from the group consisting of:
  - (a) increasing power from off to full power when the portable device is activated;
  - (b) decreasing power from full power to off when the portable device is deactivated; and
  - (c) cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power.
3. A portable device as claimed in claim 2, wherein the increase and decrease in power are both steady and over a predetermined time, the predetermined time being selected from the group consisting of: in the range 0.5 to 5 seconds, in the range 1 to 3 seconds, and 2.5 seconds.

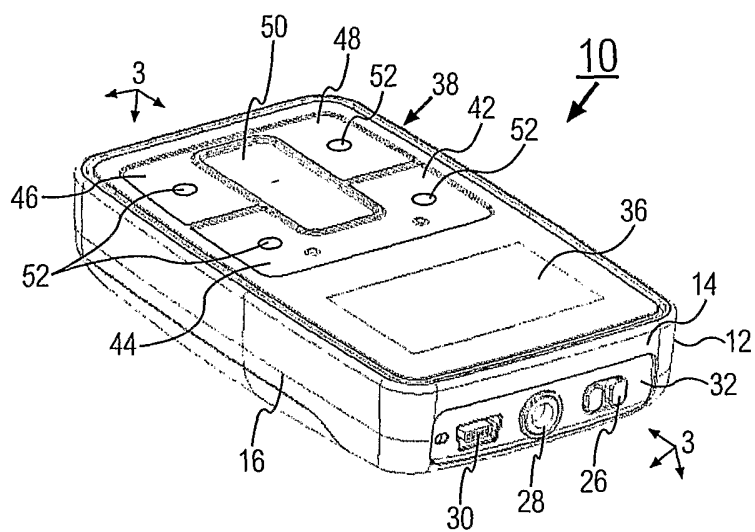
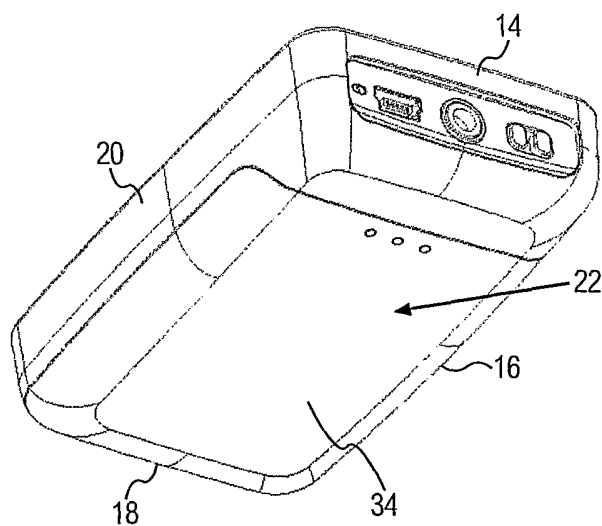
4. A portable device as claimed in claim 2, wherein the cycle of (c) is to simulate a naturally-occurring cyclic pattern in at least one of: amplitude, and period.
5. A portable device as claimed in claim 4, wherein the cyclic pattern is human and is selected from the group consisting of: heartbeat, and breathing.
6. A portable device as claimed in claim 2, further comprising an illuminated display screen, the power controller also controlling power for the illumination of the display screen in the same manner as the at least one light source.
7. A portable device as claimed in claim 6, wherein the at least one wall is a top of the body, the display screen being located beneath an opening in the first non-translucent coating.
8. A portable device as claimed in claim 1, wherein the outer peripheral edges have a groove, at least a part of the groove not being coated with the first non-translucent coating.
9. A portable device as claimed in claim 1, wherein each of the plurality control indications are for one of a plurality control zones and are an indication of a function of the control zone; the plurality of light sources not being aligned with the plurality of control indications.
10. A portable device comprising:
  - (a) a source of power;
  - (b) a power controller;
  - (c) a microprocessor;
  - (d) a memory;
  - (e) at least one light source for illuminating at least one of a plurality of control indications and an outer peripheral groove;
  - (f) the power controller being for controlling power to the at least one light source; the control being at least one selected from the group consisting of:
  - (g) increasing power from off to full power when the portable device is activated;

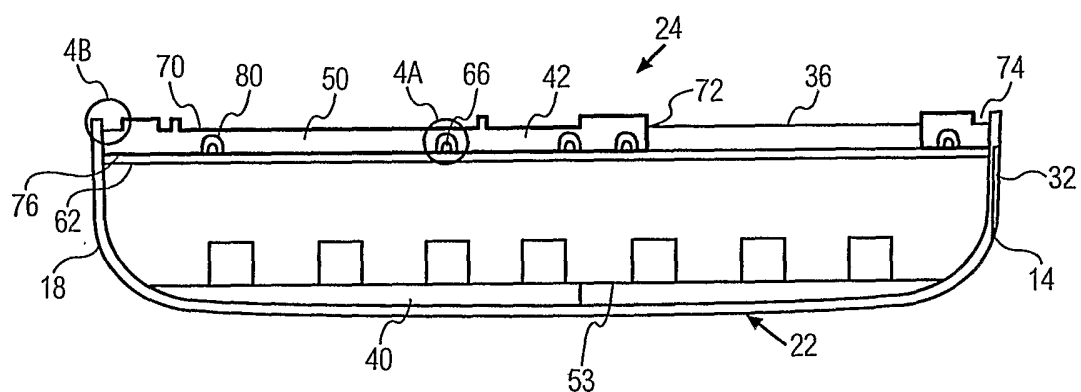
- (h) decreasing power from full power to off when the portable device is deactivated; and
  - (i) cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power.
11. A portable device as claimed in claim 10, wherein the increase and decrease in power are both steady and over a predetermined time, the predetermined time being selected from the group consisting of: in the range 0.5 to 5 seconds, in the range 1 to 3 seconds, and 2.5 seconds.
12. A portable device as claimed in claim 10 further comprising:
- (a) a body;
  - (b) at least one wall of the body being of a translucent material and having an outer surface, an inner surface and the outer peripheral groove;
  - (c) the outer surface being coated with a first non-translucent material, there being a plurality of outer openings in the first non-translucent material to form a plurality of control indications;
  - (d) the inner surface being coated with a second non-translucent material, there being at least one inner opening in the second non-translucent material aligned with at least one light source;
  - (e) the first non-translucent coating and the second non-translucent coating causing internal reflection within the at least one wall except for the outer openings and the outer peripheral groove through which light from the at least one light source is able to pass.
13. A portable device as claimed in claim 12, wherein the at least one wall is a top of the body, a display screen being located beneath an opening in first non-translucent coating; the power controller also controlling power for the illumination of the display screen in the same manner as the at least one light source.
14. A portable device as claimed in claim 10, wherein each of the plurality control indications are for one of a plurality control zones, each of the plurality of control zones being an indication of a

function of the control zone; the plurality of light sources not being aligned with the plurality of control indications.

15. A portable device as claimed in claim 10, wherein the outer peripheral groove has a vertical portion and a horizontal portion, at least one of the vertical portion and the horizontal portion not being coated with the first non-translucent coating.
16. A method for controlling illumination of a portable device, the method comprising using a power controller of the portable device to control power supplied to at least one light source for providing the illumination, the control being at least one selected from the group consisting of:
  - (a) increasing power from off to full power when the portable device is activated;
  - (b) decreasing power from full power to off when the portable device is deactivated; and
  - (c) cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power.
17. A method as claimed in claim 16, wherein the increase and decrease in power are both steady and over a predetermined time, the predetermined time being selected from the group consisting of: in the range 0.5 to 5 seconds, in the range 1 to 3 seconds, and 2.5 seconds.
18. A method as claimed in claim 16, the portable device further comprising an illuminated display screen, the power controller also controlling power for the illumination of the display screen in the same manner as the at least one light source.
19. A method as claimed in claim 16, wherein the cycle of (c) is to simulate a naturally-occurring cyclic pattern in at least one of: amplitude, and period.
20. A method as claimed in claim 19, wherein the cyclic pattern is human and is selected from the group consisting of: heartbeat, and breathing.

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**FIG. 1****FIG. 2**



**FIG. 3**

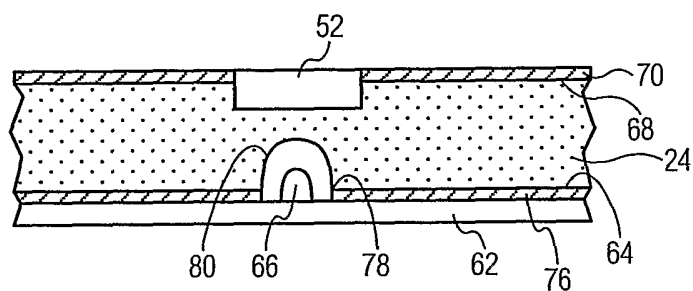
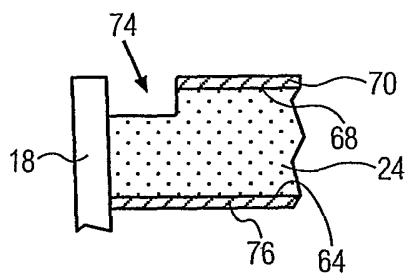
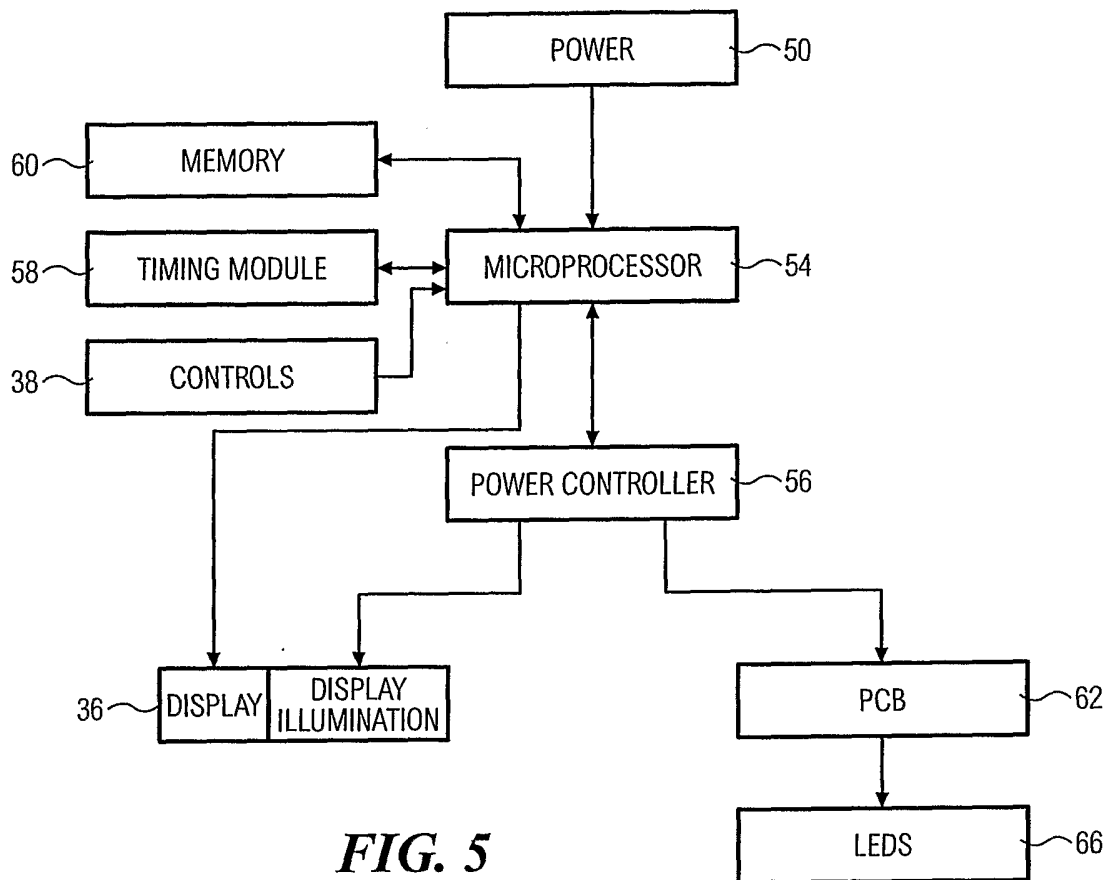
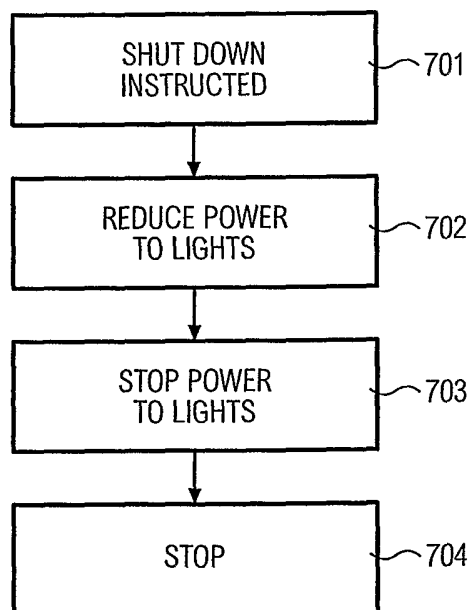


FIG. 4A

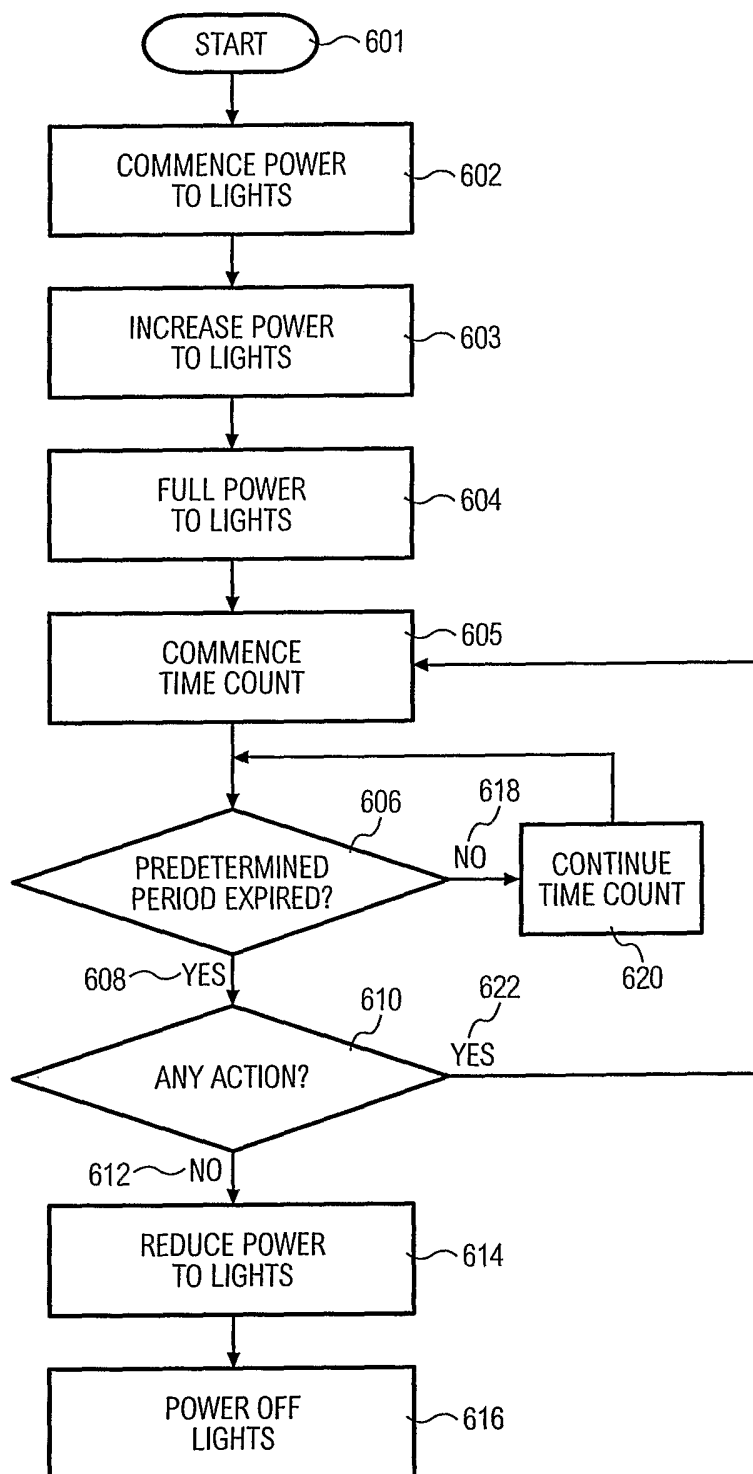


**FIG. 4B**

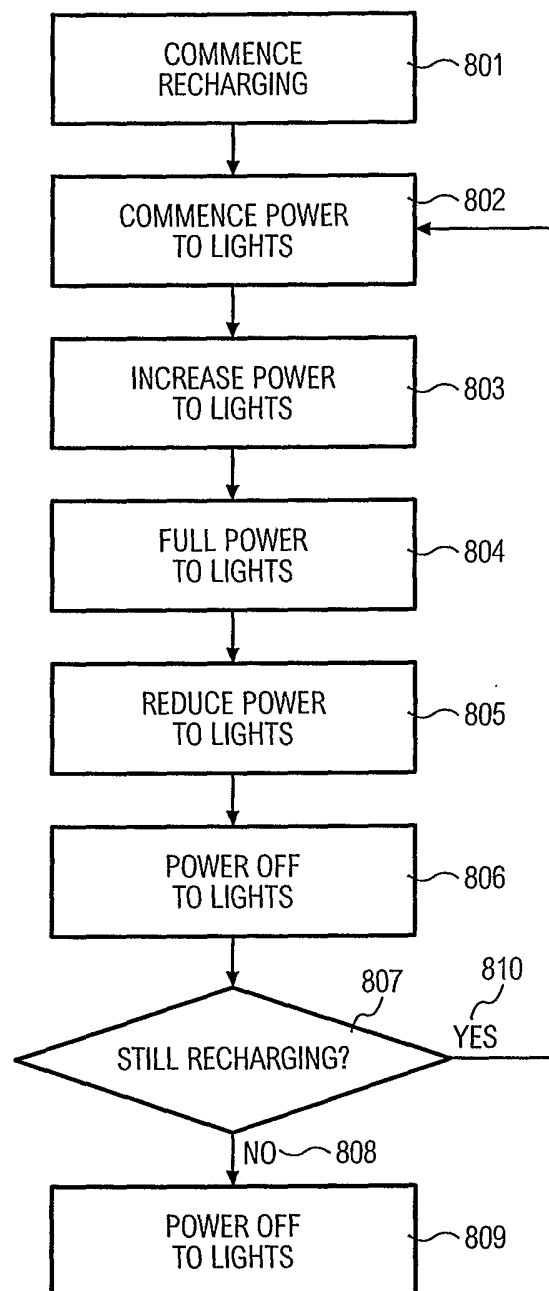
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**FIG. 5****FIG. 7**

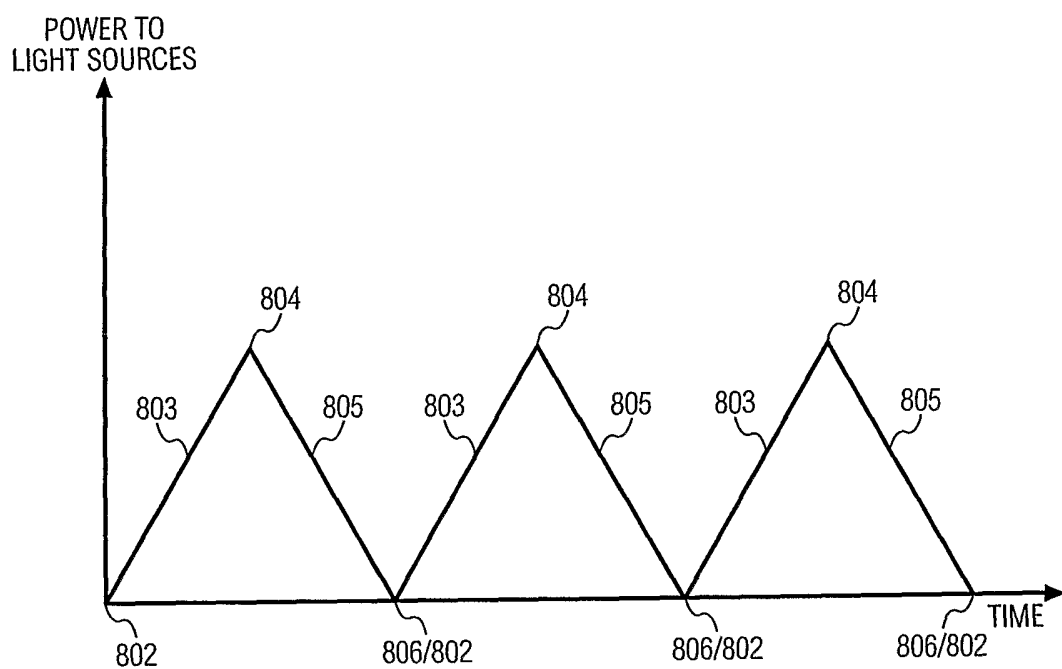
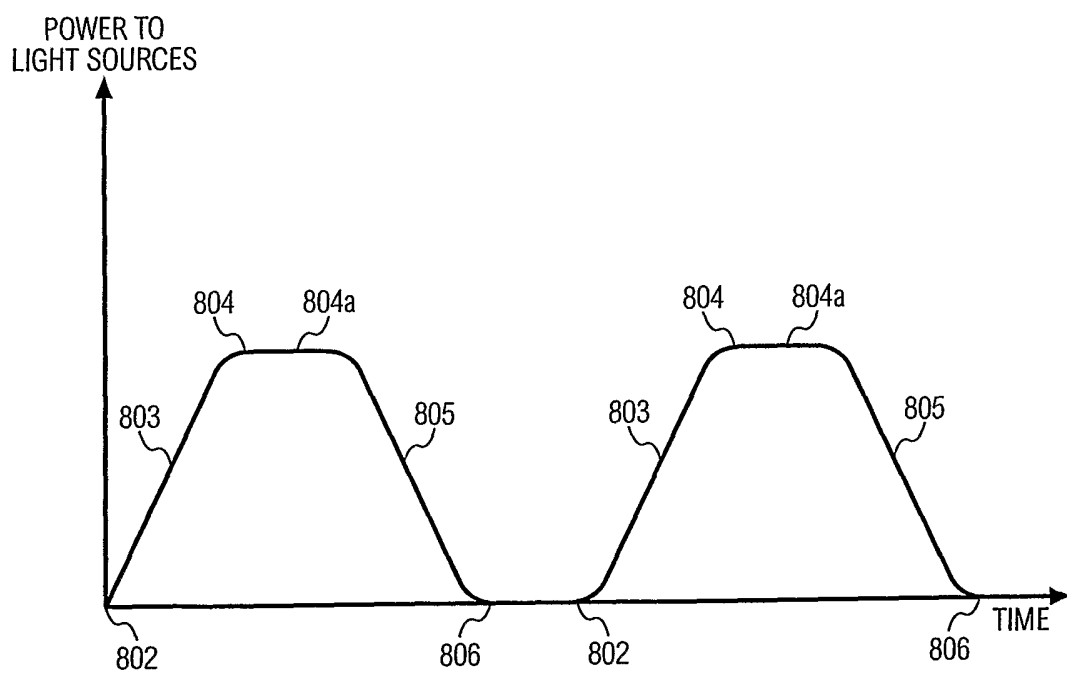
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**FIG. 6**

5/6

**FIG. 8**

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**FIG. 9****FIG. 10**

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2005/000327

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

**G02F 1/19** (2006.01)**H04Q 7/32** (2006.01)**H05B 33/08** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
dwp1 (panel, housing, casing, opening, light, illumination, portable, personal, translucent, transparent, refraction, reflection, control, power, drive, increase, decrease, cyclical, periodic)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|-----------|--------------------------------------------------------------------------------------|-----------------------|
| A         | US 2004/0125325 A1 (MURAI et al.) 1 July 2004<br>The whole document                  |                       |
| A         | GB 2348040 A (MOTOROLA INC.) 20 September 2000<br>The whole document                 |                       |
| X         | US 2002/0157292 A1 (LANDERS, JR et al.) 31 October 2002<br>Paragraphs 50, 52, 57, 59 | 10-11, 16-20          |
| X         | US 6299322 B1 (YOKOTA) 9 October 2001<br>Column 2, line 38 – column 3 line 49        | 10-11, 16-20          |

☒ Further documents are listed in the continuation of Box C☒ See patent family annex

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Special categories of cited documents:                                                                                                                                |                                                                                                                                                                                                                                                  |
| "A" document defining the general state of the art which is not considered to be of particular relevance                                                                | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                                              |
| "E" earlier application or patent but published on or after the international filing date                                                                               | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                                                                     |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "O" document referring to an oral disclosure, use, exhibition or other means                                                                                            | "&" document member of the same patent family                                                                                                                                                                                                    |
| "P" document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                                                                                                                                  |

Date of the actual completion of the international search  
01 February 2006Date of mailing of the international search report  
10 FEB 2006Name and mailing address of the ISA/AU  
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2005/000327

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                    |                       |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                                             | Citation of document, with indication, where appropriate, of the relevant passages                                 | Relevant to claim No. |
| X                                                     | EP 1033903 A2 (NOKIA MOBILE PHONES LTD.) 6 September 2000<br>The abstract, paragraphs 11, 17                       | 10-11, 16-20          |
| X                                                     | Derwent Abstract Accession No. 97-391570/36, Class X26, JP 9172481 A (SHARP KK) 30 June 1997<br>The whole abstract | 10-11, 16-20          |

**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/SG2005/000327****Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:  
See extra sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☒ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

**Continuation of Box No. III:**

The two inventions are:

1. Claim 1 is directed to a portable device including:
  - a. a body
  - b. at least one wall of the body being of a translucent material and having an outer surface, an inner surface and an outer peripheral edge surface
  - c. the outer surface being coated with a first non-translucent material, there being a plurality of outer openings in the first non-translucent material to form a plurality of control indications
  - d. the inner surface being coated with a second non-translucent material, there being at least one inner opening in the second non-translucent material aligned with at least one light source
  - e. the first non-translucent coating and the second non-translucent coating causing internal reflection within the at least one wall except for the outer openings, and the outer peripheral edge through which light from the at least one light source is able to pass
2. Claims 10-11, 16-20 are directed to a power controller for controlling power supplied to the light source for illuminating a plurality of control indications including at least one of the following steps:
  - a. increasing power from off to full power when the portable device is activated
  - b. decreasing power from full power to off when the portable device is deactivated
  - c. cyclically increasing power from off to full power to off in a repeated cycle when the portable device is connected to an external source of power

It will be noted that the claimed inventions do not share a special technical feature and are therefore lacking unity of invention.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/SG2005/000327**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in<br>Search Report                                                                                 |            | Patent Family Member |            |    |            |
|---------------------------------------------------------------------------------------------------------------------------|------------|----------------------|------------|----|------------|
| US                                                                                                                        | 2004125325 | CN                   | 1512239    | JP | 2004212532 |
| GB                                                                                                                        | 2348040    | CN                   | 1266998    | SG | 80614      |
| US                                                                                                                        | 2002157292 | US                   | 6615520    |    |            |
| US                                                                                                                        | 6299322    | JP                   | 2000324238 |    |            |
| EP                                                                                                                        | 1033903    | FI                   | 990128     | FI | 991140     |
|                                                                                                                           |            | US                   | 6320330    | JP | 2000232241 |
| JP                                                                                                                        | 9172481    |                      |            |    |            |
| Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. |            |                      |            |    |            |
| END OF ANNEX                                                                                                              |            |                      |            |    |            |