

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
13 April 2006 (13.04.2006)

PCT

(10) International Publication Number  
**WO 2006/038890 A1**

(51) International Patent Classification<sup>7</sup>: **F21V 33/00**,  
F21L 4/00

(21) International Application Number:  
PCT/SG2005/000334

(22) International Filing Date:  
30 September 2005 (30.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
10/961,102 8 October 2004 (08.10.2004) US

(71) Applicant (for all designated States except US): **CRE-  
ATIVE TECHNOLOGY LTD** [SG/SG]; 31 International  
Business Park, Creative Resource, Singapore 609921 (SG).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **SIM, Wong Hoo**  
[SG/SG]; 5 Chestnut Terrace, Singapore 679123 (SG).

(74) Agent: **ALBAN TAY MAHTANI & DE SILVA**; 39  
Robinson Road, #07-01 Robinson Point, Singapore  
068911 (SG).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY,  
MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO,  
NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,  
SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,  
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

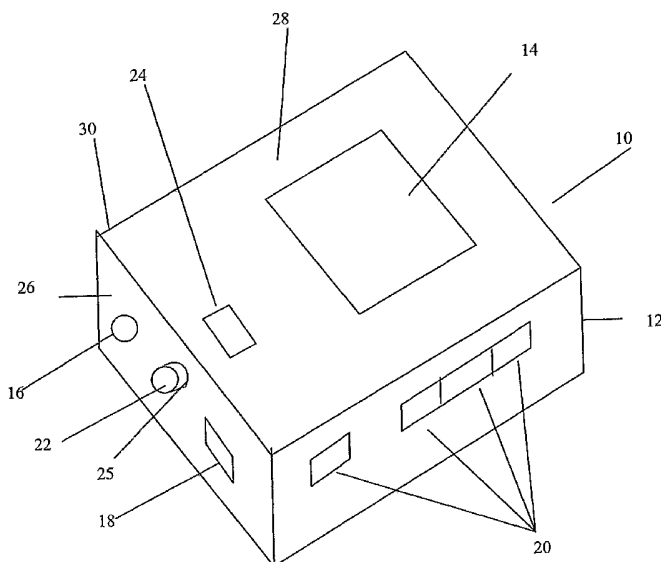
— of inventorship (Rule 4.17(iv))

**Published:**

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: MEMORY-BASED AUDIO PLAYER WITH ILLUMINATION



(57) Abstract: A memory-based audio player (10) with illumination comprising a casing (12) and an audio system within the casing (12). The audio system is able to be powered by an energy source when the energy source is operatively connected to the audio system. At least one light source (22) is mounted to a first wall (26) of the casing (12) and is able to be energized by the energy source when the energy source is located within the audio player. A switch (24) is mounted to the casing (12) for controlling the energization of the light source (22) by the energy source. There is also a rewritable memory for storing digital media tracks. The audio system comprises an audio processor for playing media tracks stored in the rewritable memory and an output coupled to the audio processor.

WO 2006/038890 A1

## Memory-Based Audio Player With Illumination

### Field of the Invention

5 This invention relates to a memory-based audio player with illumination refers particularly, though not exclusively, to such an audio player with illumination for illumination of objects external to the audio player.

### Background of the Invention

10

Memory-based audio players are becoming quite common. Such audio players use a non-volatile memory for recording audio. The non-volatile memory may be one or more of: disks and flash memory. The audio player may operate according to a number of know systems including, for example MP3.

15

As disk sizes become smaller, and flash memory more available, such audio players are become quite compact. As such, they can easily be carried in a pocket, handbag, briefcase, or the like.

20

As most people will also have other electronic devices in the pocket, handbag, briefcase, or the like, it is becoming awkward to carry so many electronic devices, and also difficult to find the correct device when needed.

### Summary of the Invention

25

According to a first aspect there is provided a memory-based audio player with illumination comprising a casing and an audio system within the casing. The audio system is able to be powered by an energy source when the energy source is operatively connected to the audio system. There is a rewritable memory for  
30 storing digital media tracks, and at least one light source mounted to a first wall of the casing. The light source is able to be energized by the energy source when the energy source is operatively connected to the audio system. Also, there is a switch mounted to the casing for controlling the energization of the light source by the energy source. The audio system comprises an audio processor for playing media  
35 tracks stored in the rewritable memory; and an audio output coupled to the audio processor.

The switch may be mounted in a second wall of the casing, the first and second walls being different and intersect at an edge. The switch may be adjacent the edge, and may be aligned along the edge with the light source.

5 The switch may be momentary switch, and the audio player may further comprise an electronic circuit with a latching function. The electronic circuit may further comprise a DC/DC converter for converting a voltage as supplied by the energy source.

10 The light source may be a light emitting diode, preferably a light emitting diode for emitting white light. The energy source may be a battery located in a compartment within the casing. The audio player may be a portable MP3 player.

#### **Detailed Description of the Drawings**

15

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 the reference to the accompanying illustrative drawings in which:

20

Figure 1 is a perspective view of the first embodiment of an audio player in accordance with the present invention;

25

Figure 2 is perspective view of a second embodiment of a audio player in accordance with the present invention;

Figure 3 is a front view of the third embodiment of a audio player in accordance with the present invention; and

30

Figure 4 is block diagram of a preferred circuit for use with the embodiment of Figures 1 to 3.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

35

Figures 1 and 2 both show portable audio players such as MP3 players. The player 10 of Figure 1 is of a well-known form and generally uses disks (not shown) as a non-volatile memory for storage of audio or other data. Figure 2 is of a well-

known form and generally uses flash memory as non-volatile memory for storage of audio or data.

Each player 10 has a casing 12 with a display 14, earphone socket 16, recharging  
5 socket 18 (Figure 1 only) and various control buttons or switches generally indicated as 20.

Mounted in or to an end wall 26 of casing 12 is a light source 22. The light source 22 may be one or more incandescent globes or one or more light emitting diodes.  
10 If a light emitting diode, it may be for emitting white light, or any colour including red, yellow, green, blue, and so forth. A light emitting diode is preferred due to its relatively low power consumption. An ultrabright light emitting diode may be used. Although the light source 22 is shown mounted in an opening 25 in the wall 26, it may be mounted in any wall of casing 12. The light source 22 should be exposed  
15 to the outer surface of wall 26 but may not project beyond wall 26 so that wall 26 provides a physical protection. Furthermore, opening 25 may provide a constraint on light emission from light source 22 to reduce the included angle of distribution of light emitted from light source 22.

20 Mounted in front wall 28 of casing 12 is a switch 24 to selectively operate light source 22. The switch 24 may be in any wall of casing 12 including wall 26 in which light source is mounted, but it is preferred that the switch 24 be in a different wall to light source 22. Preferably, the walls 26, 28 in which light source 22 and switch 24 are located respectively intersect at an edge 30. More preferably, switch  
25 24 is adjacent edge 30 joining the surfaces 26, 28. The switch 24 may be aligned with light source 22 along the edge 30. In this way, when the switch 24 is operated the light source 22 will generally be aimed toward whatever object is to be illuminated.

30 As shown in Figure 3, the switch 24 may not be aligned with light source 22 along edge 30. However, it is preferred for switch and light source 22 to be relatively close to each other, as is shown in all three embodiments.

Figure 4 illustrates a preferred electric circuit. The audio player 10 has a  
35 compartment 27 for accommodating therein a source of electrical energy 29 such as, for example, a battery, a rechargeable battery, an adapter connected to the audio player 10, or the like. The energy source 29 is used to provide energy to

illuminate light source 22 as well as for the audio player audio system including (but not limited to): control circuits 32, rewritable data memory 34 for storing digital media tracks, audio output 16, switch controller 36, and other functions 38. The energy source 28 is operatively connected to light source 22 by electrical lines 30.

5

The switch 24 is in line(s) 30 to control the operation of light source 22. The switch 24 may be a mechanical sliding switch with two separate positions for on and off; a push switch with two states – on and off; or a momentary switch that is on only when pressed. An electronic circuit 26 with a latching function may be provided so that switch 24 can be at momentary switch that operates with the latching function such that pressing the switch 24 once will turn on the light source 22, and pressing the switch 24 a second time will turn off the light source 22.

If the voltage from energy source 29 is insufficient to provide sufficient potential to fully energize light source 22, a DC/DC converter 31 may be provided to increase the voltage to the required level. Conversely, if the voltage from energy source 29 is excessive for light source 22, a DC/DC converter 31 may decrease the voltage to the desired level. For example, battery 29 may be 1.5V and light source 22 may require 5V to operate.

20

Similarly, circuit 26 may include a voltage regulator to provide a relatively constant voltage to light source 22.

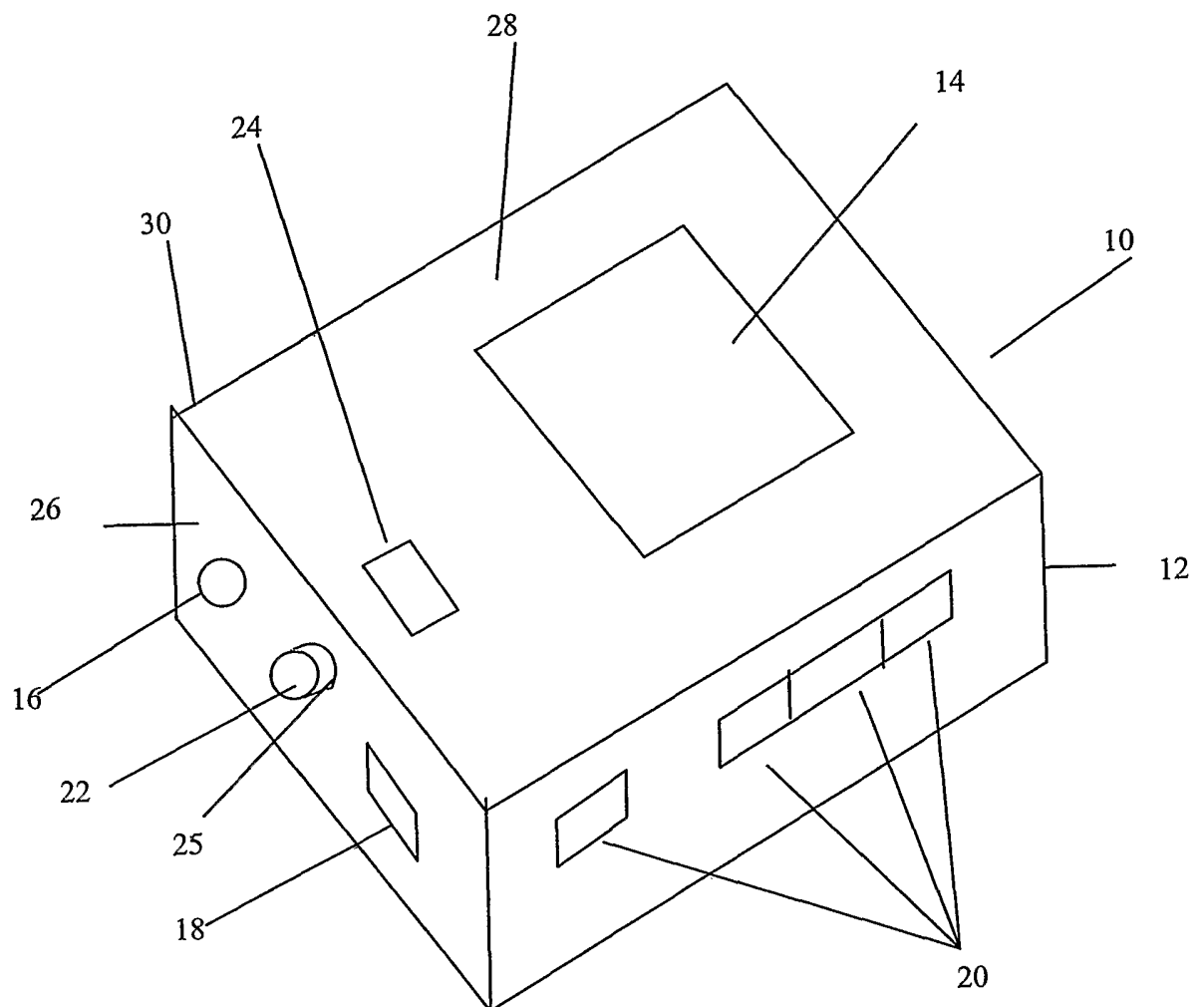
Whilst there has been described in the foregoing description preferred embodiments of the present invention, it will be understood by those skilled in the technology that many variations or modifications in details of design or construction may be made without departing from the present invention.

25

## THE CLAIMS

1. A memory-based audio player with illumination comprising:
- (a) a casing;
- 5 (b) an audio system within the casing and being able to be powered by an energy source when the energy source is operatively connected to the audio system;
- (c) a rewritable memory for storing digital media tracks;
- (d) at least one light source mounted to a first wall of the casing and
- 10 able to be energised by the energy source when the energy source is located within the audio player;
- (e) a switch mounted to a second wall of the casing for controlling the energisation of the light source by the energy source;
- (f) the audio system comprising an audio processor for playing media
- 15 tracks stored in the rewritable memory, and
- (g) an audio output coupled to the audio processor,
- wherein light emission from the at least one light source is constrained to restrict the angle of distribution of the light emitted from the at least one light source.
- 20
2. An audio player as claimed in claim 1, wherein the switch is mounted in a second wall of the casing, the first and second walls being different and intersecting at an edge.
- 25
3. An audio player as claimed in claim 2, wherein the switch is adjacent the edge.
4. An audio player as claimed in claim 2, wherein the switch is aligned with the light source along the edge.
- 30
5. An audio player as claimed in claim 3 wherein the switch is aligned with the light source along the edge.
6. An audio player as claimed in claim 1, further comprising an electronic
- 35 circuit with a latching function, the switch being a momentary switch.

7. An audio player as claimed in claim 6, the electronic circuit further comprising a DC/DC converter for converting a voltage as supplied by the energy source.
- 5 8. An audio player as claimed in claim 6, wherein the first wall and the second wall are different and intersect at an edge, the switch being aligned with the light source along the edge.
9. An audio-player as claimed in claim 1, wherein the light source is a light  
10 emitting diode.
10. An audio-player as claimed in claim 1, wherein the energy source comprises a battery receivable in a compartment located within the casing.
- 15 11. An audio-player as claimed in claim 12, wherein the audio player is a portable MP3 player.

**Figure 1**

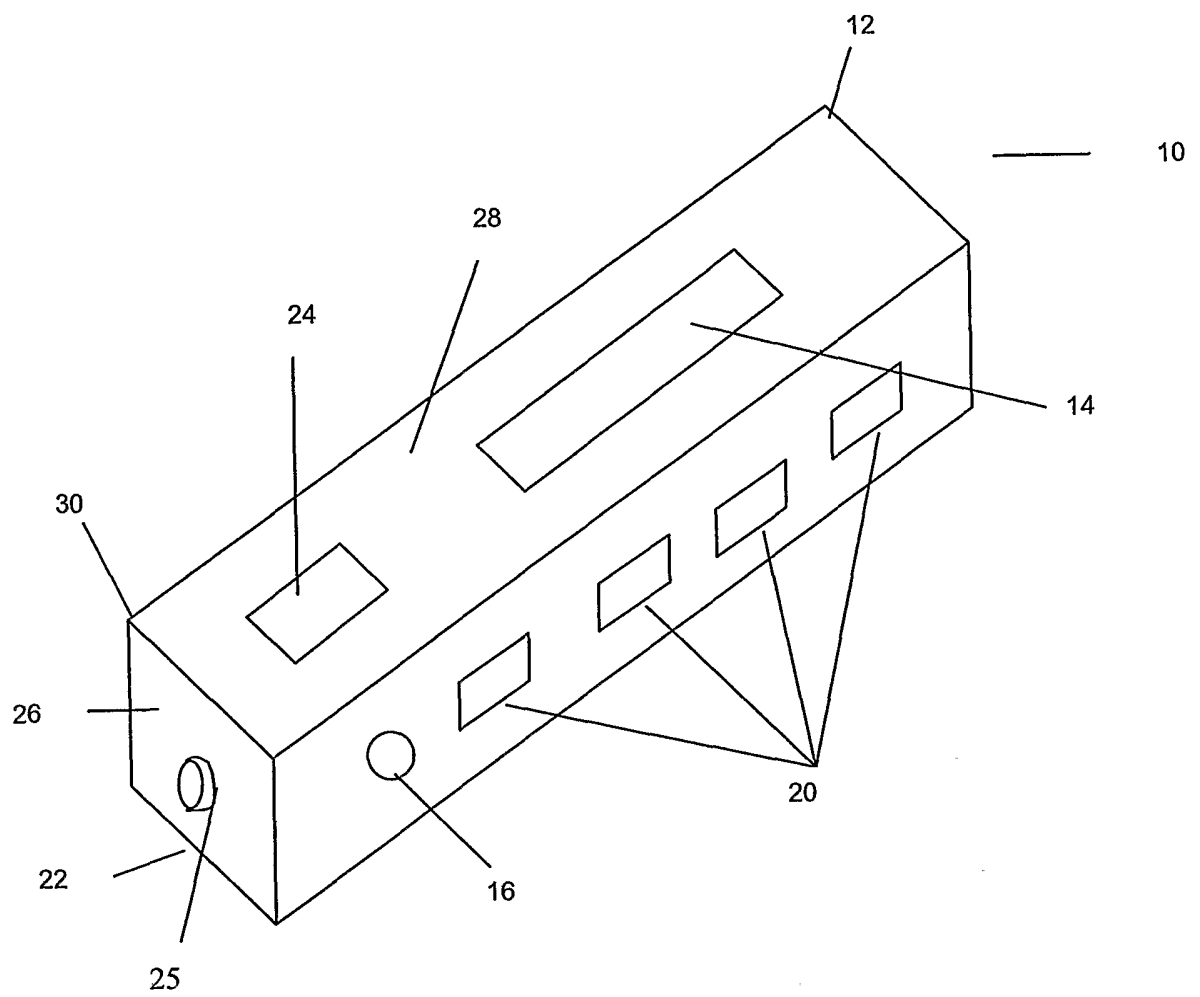


Figure 2

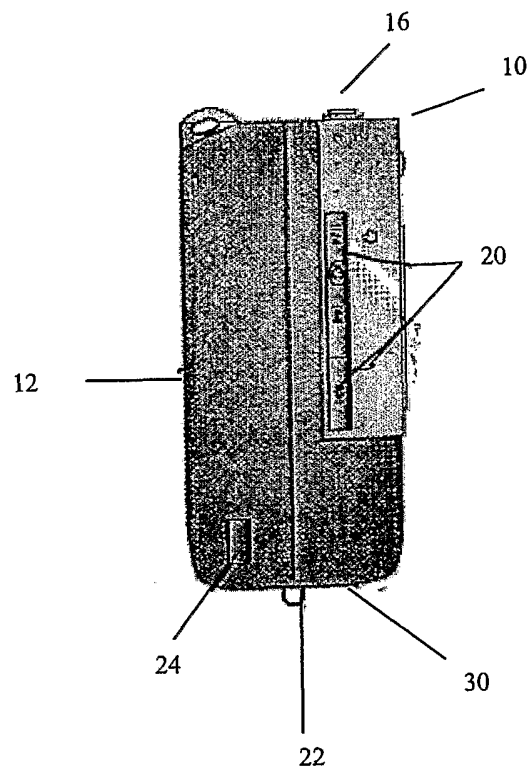


Figure 3

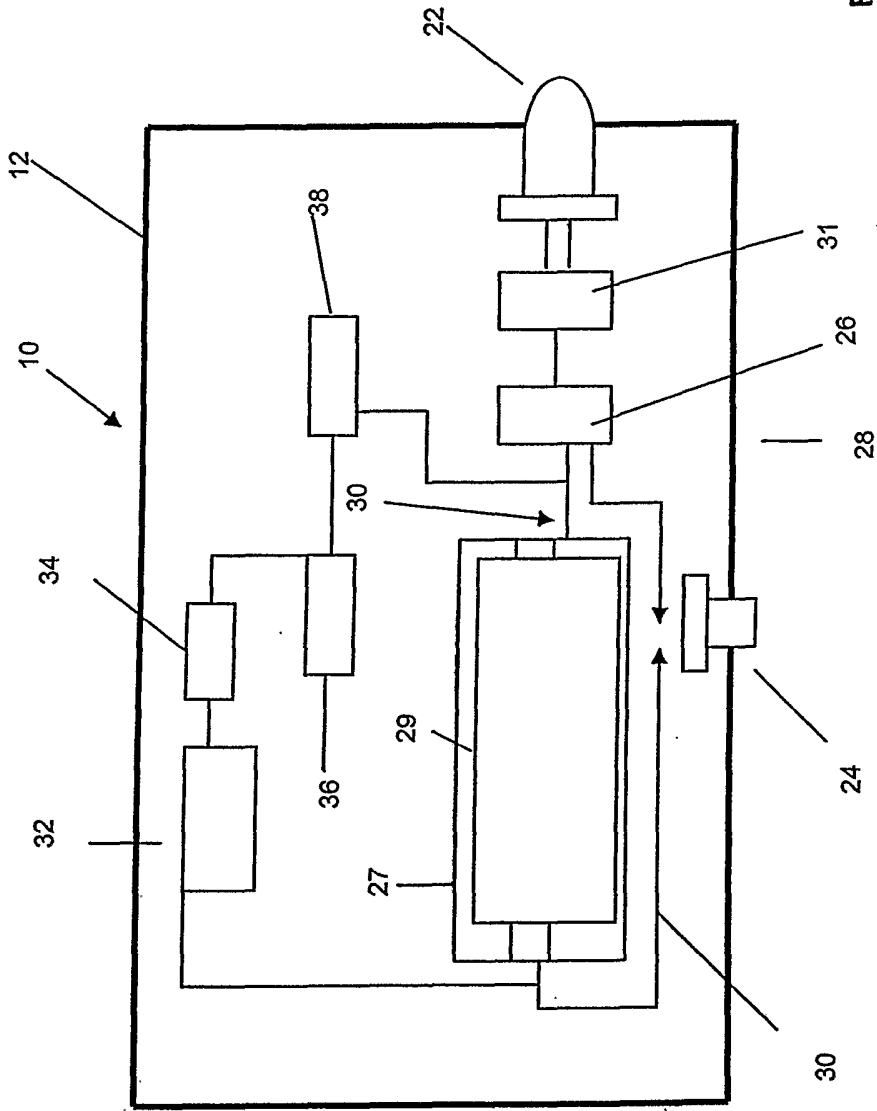


Figure 4

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2005/000334

| A. CLASSIFICATION OF SUBJECT MATTER                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Int. Cl. <sup>7</sup> : F21V 33/00, F21L 4/00                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
| 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)<br>Google, AllTheWeb, DWPI (mp3, flashlight, etc.)                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
| Category*                                                                                                                                                                                                                       | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                                                                                                                                  | Relevant to claim No.                                                                                                                                                                                                                               |
| X                                                                                                                                                                                                                               | <i>Vandisori</i> website, as archived June-July 2004<br><a href="http://web.archive.org/web/20040618122417/vandisori.com/english/contents/vandisori.asp">http://web.archive.org/web/20040618122417/vandisori.com/english/contents/vandisori.asp</a><br><a href="http://web.archive.org/web/20040706173012/vandisori.com/english/contents/vandisori_feature.asp">http://web.archive.org/web/20040706173012/vandisori.com/english/contents/vandisori_feature.asp</a><br><br>See also: | 1-11                                                                                                                                                                                                                                                |
| X                                                                                                                                                                                                                               | <i>Vandisori MP3 User Manual</i> , 26 April 2004<br><a href="http://www.vandisori.com/epds//vandisori-manual-english.zip">http://www.vandisori.com/epds//vandisori-manual-english.zip</a>                                                                                                                                                                                                                                                                                           | 1-11                                                                                                                                                                                                                                                |
| L                                                                                                                                                                                                                               | <a href="http://www.vandisori.com/english/downloadmanager/download_list.asp?DT=UG">http://www.vandisori.com/english/downloadmanager/download_list.asp?DT=UG</a>                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
| X                                                                                                                                                                                                                               | <i>Vandisori MP3 Player with Flashlight, Mirror and Retro LED Review</i> , archived June 2004<br><a href="http://web.archive.org/web/20040621192209/www.i4u.com/section-viewarticle-43.html">http://web.archive.org/web/20040621192209/www.i4u.com/section-viewarticle-43.html</a>                                                                                                                                                                                                  | 1-11                                                                                                                                                                                                                                                |
| X                                                                                                                                                                                                                               | <i>New Motion Tech Muzic AERA</i> , 11 February 2003, as archived July 2004<br><a href="http://web.archive.org/web/20040705043118/http://www.bjorn3d.com/read_pf.php?cID=225">http://web.archive.org/web/20040705043118/http://www.bjorn3d.com/read_pf.php?cID=225</a>                                                                                                                                                                                                              | 1-11                                                                                                                                                                                                                                                |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
| *<br>"A"                                                                                                                                                                                                                        | Special categories of cited documents:<br>document defining the general state of the art which is not considered to be of particular relevance                                                                                                                                                                                                                                                                                                                                      | "T"<br>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"<br>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"<br>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                                                                                                                                                                                                                                                                                                                                                                                                            | "&"<br>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<br>9 November 2005                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Date of mailing of the international search report<br>21 NOV 2005                                                                                                                                                                                   |
| Name and mailing address of the ISA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: <a href="mailto:pct@ipaustalia.gov.au">pct@ipaustalia.gov.au</a><br>Facsimile No. (02) 6285 3929 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Authorized officer<br><br><b>MATTHEW HOLLINGWORTH</b><br>Telephone No : (02) 6283 2024                                                                                                                                                              |

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2005/000334

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                                                                                                                                                                                                                                                                            |                       |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                                             | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                         | Relevant to claim No. |
| X                                                     | <i>Concord Camera Corp Unveils the DVx by Concord – 6-in-1 Digital Video Camera with Superior Versatility</i> , Concord Camera Corporation press release, 27 September 2004<br><a href="http://www.concord-camera.com/uploadedFiles/News_and_Media/Press_Releases/2004/Dvx.pdf">http://www.concord-camera.com/uploadedFiles/News_and_Media/Press_Releases/2004/Dvx.pdf</a> | 1-11                  |
| X, P                                                  | US 2005/0130471 A1 (REGEN et al), 16 June 2005<br>paragraph 24                                                                                                                                                                                                                                                                                                             | 1-11                  |
| X, P                                                  | <i>MSI Mega Stick 520 Multi Function MP3 Player – User's Manual</i> , October 2004<br><a href="http://download.msi.com.tw/support/mnu_exe/ia_mnu/E5520v1.0.zip">http://download.msi.com.tw/support/mnu_exe/ia_mnu/E5520v1.0.zip</a>                                                                                                                                        | 1-11                  |
| X, P                                                  | <i>Xdrum XD405 and Xdrum XD501</i> reviews, February-March 2005<br><a href="http://www.dapreview.net/comment.php?comment.news.1166">http://www.dapreview.net/comment.php?comment.news.1166</a><br><a href="http://www.dapreview.net/comment.php?comment.news.1136">http://www.dapreview.net/comment.php?comment.news.1136</a>                                              | 1-11                  |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/SG2005/000334**

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                                                                                                                        | 2005130471 | US                   | 2005130468 |
| Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. |            |                      |            |
| END OF ANNEX                                                                                                              |            |                      |            |