(54) Title: DISPLAY APPARATUS WITH FUNCTION OF RECEIVING BROADCAST SIGNAL AND CONTROL METHOD THEREOF

(57) Abstract: The invention relates to a display apparatus that receives a broadcast signal, comprising: a selection input, an on screen display (OSD) generator and a display part to display a video signal thereon; a memory storing information relating to broadcast standards corresponding to regional information; and a controller controlling the OSD generator to display an OSD menu on the display part so that the regional information may be selected, and setting the broadcast standards of the display apparatus according to the information relating to the broadcast standards stored in the memory when the regional information is selected through the selection input.

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DISPLAY APPARATUS WITH FUNCTION OF RECEIVING BROADCAST SIGNAL
AND CONTROL METHOD THEREOF

FIELD OF THE INVENTION

The invention relates to a display apparatus that receives a broadcast signal and a control method thereof, and more particularly, to a display apparatus that receives a broadcast signal and a control method thereof to automatically adjust a television (TV) broadcast standard.

BACKGROUND ART

A conventional display apparatus that receives a broadcast signal has preset TV broadcast standards, e.g., the TV broadcast standards are set when the display apparatus is sold.

However, even when the TV broadcast standards are preset, a user may select a language and TV/CATV signals according to a Plug & Play method when the display apparatus is first powered.

The TV broadcast standards include the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL), and the Sequentielle Couleur Memoire (SECAM).

The conventional display apparatus is not appropriate for a multi broadcasting system because each country or region utilizes different TV broadcast standards and the TV broadcast standards are preset in the display apparatus according to the
specification of the country where the display apparatus is manufactured. As described above, a user may only select the language and TV/CATV signals. The TV broadcast standards are set to a factory mode, which is difficult to be reset.

Conversely, a World Wide TV provides various languages and selects an appropriate TV broadcasting standard according to a geographic region or country where the World Wide TV is being used.

Users may select the TV broadcast standards of the wide world TV themselves when initially applying power thereto.

However, unless users are well aware of the TV broadcast standards, it would be difficult for them to select the appropriate TV broadcast standard for their TV.

DISCLOSURE OF INVENTION

Accordingly, the invention to provide a display apparatus that receives a broadcast signal and a control method thereof, which automatically sets TV broadcast standards corresponding to a region selected by a user.

Additional features of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention.

The foregoing and/or other aspects of the present invention can be achieved by providing a display apparatus that receives a broadcast signal, comprising: a selection input, an on screen
display (OSD) generator and a display part to display a video signal thereon; a memory storing information relating to broadcast standards corresponding to regional information; and a controller controlling the OSD generator to display an OSD menu on the display part so that the regional information may be selected, and setting the broadcast standards of the display apparatus according to the information relating to the broadcast standards stored in the memory when the regional information is selected through the selection input.

According to an aspect of the present invention, the controller controls the OSD generator when power is initially input to the display apparatus.

According to an aspect of the present invention, the OSD menu for selecting the regional information comprises a continent selection menu and a country selection menu, and wherein the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Sequential Couleur Memoire (SECAM).

According to an aspect of the present invention, the OSD menu further comprises a language selection menu for selecting a language for the OSD information.

According to an aspect of the present invention, the OSD menu comprises a continent selection menu and a country
selection menu, and wherein the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Séquentiel Couleur Memoire (SECAM).

According to an aspect of the present invention, the OSD menu further comprises a language selection menu for selecting a language for the OSD information.

The foregoing and/or other aspects of the present invention can be achieved by providing a method of setting broadcast standards for a display apparatus that receives a broadcast signal and comprises a display part to display a video signal thereon, comprising: displaying an OSD menu on the display part for selecting regional information of the display apparatus; and setting the broadcast standards of the display apparatus according to the selected regional information once the regional information is selected.

According to an aspect of the present invention, the controller controls the OSD generator when power is initially input to the display apparatus.

According to an aspect of the present invention, displaying the OSD menu comprises displaying a continent selection menu and a corresponding country menu when the continent information is selected.

According to an aspect of the present invention, displaying
the OSD menu comprises displaying a language selection menu for selecting a language for the OSD information.

According to an aspect of the present invention, the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Sequantiel Couleur Memoire (SECAM).

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

FIG. 1 is a control block diagram of a display apparatus according to an embodiment of the invention.

FIG. 2 shows pictures displayed on a display apparatus to describe a method of setting TV broadcast standards of the display apparatus according to an embodiment of the invention.

FIG. 3 is a control flow chart of the method of setting the TV broadcast standards of the display apparatus according to an embodiment of the invention.
MODES FOR CARRYING OUT THE INVENTION

The invention is described more fully hereinafter with reference to the accompanying drawings, in which embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure is thorough, and will fully convey the scope of the invention to those skilled in the art. In the drawings, the size and relative sizes of layers and regions may be exaggerated for clarity.

Reference will now be made in detail to the embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. A television (TV) will be described as one type of a display apparatus, which is able to receive a broadcast signal. However, it is understood that various types of display apparatus may be used and the invention is not limited to a TV.

As shown in FIG. 1, a display apparatus according to an embodiment the invention includes a selection input 11, an on screen display (OSD) generator 13, a display part 15, a memory 17 and a controller 19. The display apparatus may be a television (TV).

The selection input 11 outputs a key signal to the
controller 19 according to a user’s adjustment. The selection input 11 may include a menu key to set regional information; an up/down/left/right adjustment key to direct and/or select respective items of a menu; and a key signal generator to generate the key signal corresponding to the key adjustment. The selection input 11 may be provided as an input device such as a mouse, a keyboard, or a wireless controller. When a user adjusts controls using the selection input 11, the key signal generator generates the key signal corresponding to the user’s adjustment, which is applied to the controller 19. Accordingly, the controller 19 controls the OSD generator 13 corresponding to the key signal input from the key signal generator.

The selection input 11 is a device that enables a user to input a selection such as by a touch screen or a touch pad.

The OSD generator 13 generates an OSD menu to adjust display conditions of the display apparatus. The OSD generator 13 may be realized as IC chips. The OSD generator 13 may be included in a video signal processor (not shown) that receives and processes broadcast signals.

The OSD menu is provided so that a user may set the display apparatus according to an appropriate region. For example, the OSD menu may include a continent selection menu that includes a plurality of continent items, and a country selection menu that includes a plurality of country items corresponding to the
continent items. The OSD menu may further include a language selection menu that includes a plurality of languages so that an appropriate or understandable language may be selected for the OSD menu.

As shown in Fig. 2, the continent selection menu may include continent items such as “America”, “Asia”, “Oceania”, “Africa”, “Europe”, etc. The continent selection menu is not limited to the continents shown in Fig. 2. The country items include the countries that are in the respective continents.

The display part 15 receives a video signal from the video signal processor (not shown) and a menu signal from the OSD generator 13 to display an image. The display part 15 includes a display panel to display the picture thereon and a panel driver. The display part 15 may be a cathode ray tube (CRT), a liquid crystal display (LCD), a plasma display panel (PDP), etc.

The memory 17 stores information about various broadcast standards corresponding to continent, country, region, etc. The memory 17 may be a read only memory (ROM), an erasable programmable read only memory (EPROM), an electrically erasable programmable read only memory (EEPROM), etc. It is understood that the memory 17 may be separately provided from the display apparatus. Alternatively, the memory 17 may be provided in the controller 19 (to be described later) of the display apparatus.

When a user inputs the menu key signal to set the regional
information through the selection input 11, the controller 19 controls the OSD generator 13 to generate a menu corresponding thereto and display it on the display part 15. Also, the controller 19 sets the display apparatus broadcast standards according to the information stored in the memory 17, when the regional information is selected or input through the selection input 11. A register may be used to set the display apparatus broadcast standards. The register may be provided externally or in the controller 19.

The display apparatus may operate according to the set broadcast standards. The controller 19 may be a controller for a microcomputer, etc.

A method of setting the display apparatus broadcast standards according to an embodiment of the invention is described below with reference to FIG. 2 and FIG. 3.

As shown in FIG. 2, when power is initially applied to the display apparatus at operation 110, a region setting menu 1 is displayed on the display part 15 according to a Plug & Play method at operation 111. The region setting menu 1 is displayed by implementing a program in the controller 19 which is programmed in advance, regardless of the input signal.

When the controller 19 receives the key input signal corresponding to selection or input of the region setting menu key of the selection input 11 at operation 110, even though the
initial power is not applied thereto, the controller 19 controls
the OSD generator 13 to generate the region setting menu and
display it to the display part 15. For example, if the display
apparatus is initialized by pressing a reset button of the
selection input 11, a user may reselect the region and set the
broadcast standards.

The background of the OSD menu may be turned off when power
is initially applied thereto. When the menu is generated
according to a menu key input, a picture processed through the
video signal processor combined and output with the menu.

When a user selects or inputs an OK button, e.g., a
confirmation button through the adjustment of the selection
input 11 at operation 112, a continent selection menu 2 is
displayed on the display part 15, as shown in FIG. 2 and at
operation 113. The conversion from the menu 1 to menu 2 may be
performed automatically.

The menu 2 may be provided as the continent selection menu
to select the continent information.

A user may select a desired item by making an adjustment or
selection using the selection input 11. They may be various sub
items of the OSD picture, such as “Move”, “Enter”, “Skip”, etc.

For example, a user may select “Move” to direct the desired
item, “Enter” to select the desired item, and “Skip” to skip
menus.
For example, if a user adjusts the selection input 11 to select "America" from the continent items at operation 114, the controller 19 controls the OSD generator 13 to display "Sub-Area" as a sub menu comprising "North America" and "South America" as sub items of "America", i.e., the country selection menu to select country information corresponding to the selected continent item, at operation 116. If a user selects "Skip" at operation 115, the controller 19 controls the OSD generator 13 to generate "Sub-Area" corresponding to the continent information which is the default continent information or set in advance to display the sub-area information on the display part at operation 116.

Thus, if a user adjusts the selection input 11 to select "North America" from among the continent selection menu, the display apparatus broadcast standards are determined accordingly at operation 123. The display apparatus broadcast standards may be set as one of the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Sequentiel Couleur Memoire (SECAM) according to the selected regional information.

The display apparatus broadcast standards setting menu according to an embodiment of the invention may include a language selection menu to select OSD language information. For example, if the country information is selected as shown in FIG.
2, the OSD menu may be displayed as a next menu to select the language at operation 119. If a user selects "Skip", the display apparatus broadcast standards are instantly determined at operation 123. The OSD language may be displayed as the default or the preset language.

If a user selects one of, for example, "English", "Espanol", "Francais" or "Portugues" displayed on the OSD menu at operation 120, the OSD language is set at operation 122.

A user may then easily set the broadcast standards corresponding to the regional condition.

In the foregoing embodiment, the television is described as an example of the present invention. However, it is understood that the display apparatus is not limited to a television, for example, a display apparatus which includes television functions, for example, a multi function monitor, may be used.

Although the above described embodiments refer to a continent selection and a sub-area, e.g., country, selection, it is understood that the invention is not limited thereto. For example, the continent selection menu may be replaced with any type of information to select and the sub-area may include any type of related information.

Although a few embodiments of the present invention have been shown and described, it will be appreciated by those skilled in the art that changes may be made in these embodiments
without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims and their equivalents.
CLAIMS

What is claimed is:

1. A display apparatus that receives a broadcast signal, comprising:
   a selection input, an on screen display (OSD) generator and a display part to display a video signal thereon;
   a memory storing information relating to broadcast standards corresponding to regional information; and
   a controller controlling the OSD generator to display an OSD menu on the display part so that the regional information may be selected, and setting the broadcast standards of the display apparatus according to the information relating to the broadcast standards stored in the memory when the regional information is selected through the selection input.

2. The display apparatus of claim 1, wherein the controller controls the OSD generator when power is initially input to the display apparatus.

3. The display apparatus of claim 2, wherein the OSD menu for selecting the regional information comprises a continent selection menu and a country selection menu, and wherein the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase
Alternation by Line (PAL) and the Sequentiel Couleur Memoire (SECAM).

4. The display apparatus of claim 3, wherein the OSD menu further comprises a language selection menu for selecting a language for the OSD information.

5. The display apparatus of claim 1, wherein the OSD menu comprises a continent selection menu and a country selection menu, and wherein the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Sequentiel Couleur Memoire (SECAM).

6. The display apparatus of claim 5, wherein the OSD menu further comprises a language selection menu for selecting a language for the OSD information.

7. A method of setting broadcast standards for a display apparatus that receives a broadcast signal and comprises a display part to display a video signal thereon, comprising:
   - displaying an OSD menu on the display part for selecting regional information of the display apparatus; and
   - setting the broadcast standards of the display apparatus
according to the selected regional information once the regional information is selected.

8. The method of claim 7, wherein the controller controls the OSD generator when power is initially input to the display apparatus.

9. The method of claim 8, wherein displaying the OSD menu comprises displaying a continent selection menu and a corresponding country menu when the continent information is selected.

10. The method of claim 9, wherein displaying the OSD menu comprises displaying a language selection menu for selecting a language for the OSD information.

11. The method of claim 7, wherein the broadcast standards comprise the United States National Television Systems Committee (NTSC), the Phase Alternation by Line (PAL) and the Sequentiel Couleur Memoire (SECAM).
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<thead>
<tr>
<th>Area Configuration</th>
<th>Area Configuration</th>
</tr>
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<tbody>
<tr>
<td><strong>①</strong> Start Plug &amp; Play</td>
<td><strong>②</strong> Area</td>
</tr>
<tr>
<td>Enter Return</td>
<td>America</td>
</tr>
<tr>
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<td>Asia/Oceania</td>
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<tr>
<th>Move</th>
<th>Enter</th>
<th>Skip</th>
<th>Move</th>
<th>Enter</th>
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</thead>
</table>
START

110 IS INITIAL POWER APPLIED OR FUNCTION OF SETTING REGION SELECTED?

111 DISPLAYING OSD MENU FOR SETTING REGION

112 IS OK BUTTON SELECTED?

113 DISPLAYING CONTINENT SELECTION MENU

114 IS CONTINENT INFORMATION SELECTED?

115 IS SKIP BUTTON SELECTED?

116 DISPLAYING COUNTRY SELECTION MENU CORRESPONDING TO SELECTED OR PRESET CONTINENT INFORMATION

117 IS COUNTRY INFORMATION SELECTED?

118 IS SKIP BUTTON SELECTED?

119 DISPLAYING LANGUAGE SELECTION MENU

120 IS OSD LANGUAGE INFORMATION SELECTED?

121 IS SKIP BUTTON SELECTED?

122 SETTING OSD LANGUAGE

123 SETTING BROADCAST STANDARDS BASED ON THE SELECTED REGIONAL INFORMATION

END
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

H04N 5/445(2006.01), H04N 5/44(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)

IPC H04R, H04N

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

Korean Patents and applications for inventions since 1980
Korean Utility models and applications Utility models for since 1980
Japanese Patents and applications for inventions since 1980

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NPS: "television, mode, area, language"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<td>US5570134 A (SAMSUNG ELECTRONICS CO., LTD.) 29.10.1996</td>
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<td>A</td>
<td>KR201999016466 U (DAEWOO ELECTRONICS CO., LTD.) 25.05.1999</td>
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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
  *E* earlier application or patent but published on or after the international filing date
  *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
  *O* document referring to an oral disclosure, use, exhibition or other means
  *P* document published prior to the international filing date but later than the priority date claimed

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
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
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
& document member of the same patent family

Date of the actual completion of the international search
25 JANUARY 2006 (25.01.2006)

Date of mailing of the international search report
26 JANUARY 2006 (26.01.2006)

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Form PCT/ISA/210 (second sheet) (April 2005)
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