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(71) Applicant: **Samsung Electronics Co., Ltd.**
Suwon-si, Gyeonggi-do 442-742 (KR)

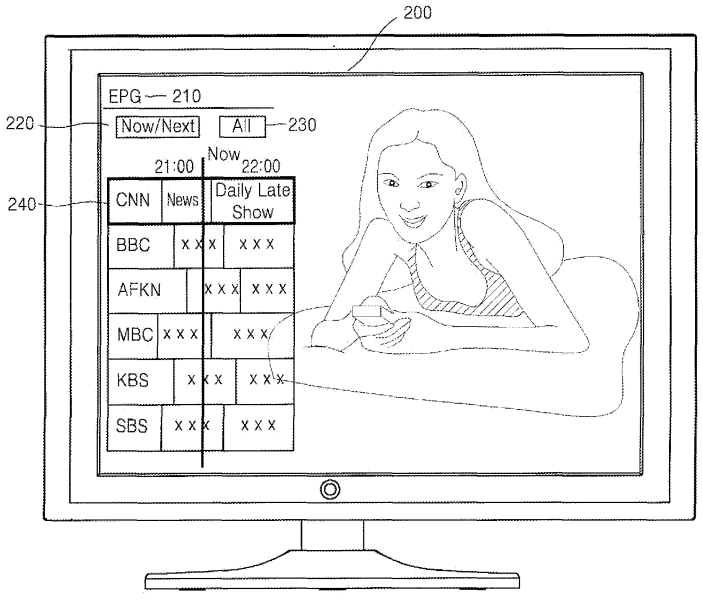
(72) Inventors:
- **Jung, Tae-ung**
  Yongin-si, Gyeonggi-do (KR)
- **Lee, Hyo-won**
  Glasnevin, 9, Dublin (IE)
- **Choi, Yoon-hee**
  Yongin-si, Gyeonggi-do (KR)
- **Smeaton, Alan Francis**
  Dublin (IE)
- **Gurrin, Cathal**
  Co Dublin (IE)

(74) Representative: **Grootscholten, Johannes A.M.**
Arnold & Siedsma
Sweelinckplein 1
2517 GK Den Haag (NL)

(54) Method and apparatus to provide broadcasting program information on screen of broadcast receiver

(57) Disclosed is a method of providing broadcasting program information, the method including obtaining electronic program guide (EPG) information, extracting first program information from the obtained EPG information, the first program information being program information with respect to all channels, generating second program information based on the first program information, the second program information being information regarding first programs currently being broadcast and second programs to be displayed next in each of the channels, and displaying the generated second program information and a vertical line or a horizontal line indicating a current time on a screen.

FIG. 2



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Description

BACKGROUND

1. Field

[0001] One or more embodiments relate to a method and an apparatus to provide broadcasting program information on a screen of a digital broadcasting receiver.

2. Description of the Related Art

[0002] As media environments become an important infrastructure of the modern economy, various stations for conventional terrestrial broadcasting, cable broadcasting, internet television (TV) broadcasting, etc. have been established. In the case of digital broadcasting, program information generated by broadcast stations are provided by using either a program and system information protocol (PSIP) or a network if the PSIP cannot be used, and TVs analyze the program information and provide the analyzed information as tables to users. The program information is referred to as electronic program guide (EPG) information, and users can obtain information regarding currently broadcast programs and programs to be broadcast in the future by browsing the EPG information.

[0003] Accordingly, modern TVs provide EPG screens so that users can obtain program information with respect to each channel, and thus methods of effectively using EPG information are researched in various ways, regardless of whether in the hardware field or in the software field. For example, the main reasons users refer to EPG information are being analyzed. Accordingly, it has been determined that the most important information to users is information regarding programs currently being broadcast and programs to be broadcast next, rather than information regarding all programs, and such information should be provided via a user-friendly interface with minimum viewing interruption. However, most conventional EPG screens fail to satisfy these requirements, and other EPG screens only provide limited information regarding current channels.

SUMMARY

[0004] One or more embodiments include a method and an apparatus to provide broadcasting program information on a screen of a digital broadcasting receiver more efficiently.

[0005] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0006] To achieve the above and/or other aspects, one or more embodiments may include a method of providing broadcasting program information on a screen of a digital broadcasting receiver, the method including obtaining electronic program guide (EPG) information; extracting first program information from the obtained EPG information, the first program information being program information with respect to all channels; generating second program information based on the first program information, the second program information being information regarding first programs currently being broadcast and second programs to be displayed next in each of the channels; and displaying the generated second program information and a vertical line or a horizontal line indicating a current time on the screen.

[0007] The display of the generated second program information and the line indicating the current time may further include calculating a first point of time at which a last second program in each of the channels starts, the second program information being displayed translucently on a side of the screen to display program information regarding second programs in all channels, based on the first point of time.

[0008] The display of the generated second program information and the line indicating the current time may further include calculating a first time interval by determining a difference between the current time and the first point of time; calculating a second time interval by multiplying a predetermined rate and the calculated first time interval; calculating a second point of time by adding the second time interval to the first point of time; and displaying a horizontal time axis of a screen displaying the second program information within the second point of time.

[0009] In the displaying of the generated second program information and the line indicating the current time, the screen of the second program information may be adjusted according to a predetermined proportion ratio.

[0010] In the displaying of the generated second program information and the line indicating the current time, progress information of first programs currently being broadcast in each channel may also be displayed.

[0011] The method may further include receiving an input from a user using directional keys disposed on a user interface device to control the digital broadcasting receiver to select a first program or a second program in a channel from the second program information; and displaying at least one of program information and related images regarding the selected first program or the second program as pop-up windows.

[0012] The method may further include receiving an input from a user using hot-keys disposed in a user interface device to select a first channel from among channels with respect to the first program or the second program; and displaying third program information including information regarding all programs in the selected first channel for all time slots on a side of the screen.

[0013] The display of the third program information may further include replacing the displayed third program information by displaying fourth program information including information regarding all programs in a second channel for all time slots by using the directional keys disposed on the user interface device, the second chan-

nel being a channel before or after the first channel.

[0014] The method may further include receiving an additional input from the user using the directional keys to select a third program in a channel in a time slot from the third program information or the fourth program information; and setting a recording function, a reserve recording function, or a remind function with respect to the selected third program.

[0015] The method may further include switching a screen of the digital broadcasting receiver by tuning to the first program or the third program when the first program or the third program is currently being broadcast.

[0016] To achieve the above and/or other aspects, one or more embodiments may include an apparatus to provide broadcasting program information on a screen of a digital broadcasting receiver, the apparatus including an electronic program guide (EPG) storage unit obtaining EPG information; an EPG extracting unit extracting first program information from the obtained EPG information, the first program information being program information with respect to all channels; a NOW/NEXT EPG generating unit generating second program information from the extracted first program information, the second program information being information regarding first programs currently being broadcast and second programs to be displayed next in each of the channels; and a screen display unit displaying the generated second program information and a vertical line or a horizontal line indicating a current time in the screen.

[0017] The screen display unit may further include a time processing unit calculating a first point of time at which a last second program in a channel starts, the second program information being displayed translucently on a side of the screen to display program information regarding second programs in all channels, based on the first point of time.

[0018] The time processing unit may calculate a first time interval by determining a difference between the current time and the first point of time, calculate a second time interval by multiplying a predetermined rate and the calculated first time interval, and calculate a second point of time by adding the second time interval to the first point of time, and the screen display unit may display a horizontal time axis of a screen displaying the second program information within the second point of time.

[0019] The screen display unit may adjust the screen of the second program information according to a predetermined proportion ratio.

[0020] The screen display unit may also display progress information of first programs currently being broadcast in each channel.

[0021] The apparatus may further include a first program selecting unit selecting a first program or a second program in channels displayed on a NOW/NEXT EPG information screen in response to an input by a user using directional keys disposed on a user interface device to control the digital broadcasting receiver; and a pop-up displaying unit displaying at least one of program information and related images regarding the selected first program or the second program selected as pop-up windows.

[0022] The apparatus may further include a channel selecting unit selecting a first channel from among channels with respect to the first program or the second program in response to an input from a user using hot-keys disposed on the user interface device; and a brief EPG information displaying unit displaying third program information regarding all programs in the selected first channel for all time slots.

[0023] The brief EPG information displaying unit may further include a program information switching unit switching from the displayed third program information to display fourth program information including information regarding all programs in a second channel for all time slots in response to a user using the directional keys disposed on the user interface device in the screen, the second channel being a channel before or after the first channel.

[0024] The apparatus may further include a second program selecting unit selecting a third program in a channel in a time slot from the third program information or the fourth program information in response to an additional input from a user using the directional keys; and a function setting unit setting a recording function, a reserve recording function, or a remind function with respect to the selected third program.

[0025] The apparatus may further include a screen switching unit switching a screen of the digital broadcasting receiver by tuning to the first program or the third program when the first program or the third program is currently being broadcast.

[0026] To achieve the above and/or other aspects, one or more embodiments may include a computer readable recording medium having recorded thereon a computer program to cause a processor to execute the method of providing broadcasting program information.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] These and/or other aspects will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a flowchart of a method of providing broadcasting program information in a screen of a digital broadcasting receiver, according to an embodiment;

FIG. 2 is a diagram showing a screen of a digital broadcasting receiver, according to an embodiment;

FIG. 3 is a flowchart of a method of calculating time intervals for time regions to display information regarding programs to be broadcast next;

FIG. 4 is a flowchart of an interface operation using EPG information displayed on a screen of a digital broadcasting receiver, according to another embodiment;

FIG. 5 is a diagram showing an example of brief EPG information of a channel, according to another embodiment;

FIG. 6 is a flowchart of an interface operation using brief EPG information, according to another embodiment; and

FIG. 7 is a functional block diagram of an apparatus to display EPG information on a screen of a digital broadcasting receiver, according to another embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS

[0028] Reference will now be made in detail to embodiments, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. In this regard, the present embodiments may have different forms and should not be construed as being limited to the descriptions set forth herein. Accordingly, the embodiments are merely described below, by referring to the figures, to explain aspects of the present invention.

[0029] To resolve the most important demands of users, the present embodiments are meant to suggest a method in which information regarding programs currently being broadcast and programs to be broadcast next for all channels can be easily obtained, viewing interruptions can be minimized, and electronic program guide (EPG) information can be displayed in an interface more easily than that in the related art.

[0030] EPG information can be shown either fully or briefly. Hereinafter, a method of fully showing EPG information will be referred as a full EPG method, and a method of briefly showing EPG information will be referred as a brief EPG method. EPG information may be shown on a screen that is, for example, either opaque or translucent.

[0031] Information regarding all channels and all programs should be provided according to the full EPG method, and thus it is necessary to occupy most regions of a screen. Thus, the brief EPG method may be used such that a viewer can briefly view EPG information. However, according to the brief EPG method, information regarding a current channel or information regarding current programs for all channels are shown. Furthermore, even in the brief EPG method, many portions of a screen are also occupied, thus often causing viewing interruptions.

[0032] The present embodiments provide a method according to which viewing interruptions may be minimized when providing EPG information, information regarding programs currently being broadcast, programs to be broadcast next, and the broadcast programs most demanded by viewers, can easily be obtained, and EPG information can be manipulated via an interface more easily than those in the related art.

[0033] FIG. 1 is a flowchart of a method of providing broadcasting program information in a screen of a digital broadcasting receiver, according to an embodiment.

[0034] Referring to FIG. 1, the method of providing broadcasting program information in a screen of a digital broadcasting receiver, according to an embodiment, includes an operation 110 of obtaining EPG information, an operation 120 of extracting first program information, which is program information for all channels, from the obtained EPG information, an operation 130 generating second program information, which includes information regarding first programs currently being broadcast and second programs to be broadcast next based on the first program information, and an operation 140 displaying the generated second program information and either a vertical line or a horizontal line indicating a current time on the screen.

[0035] Here, while the first program information includes information regarding broadcasting programs for all time slots in all channels, the second program information only includes information regarding programs currently being broadcast and programs to be broadcast next in all channels. Here, according to modified exemplary embodiments, information regarding two or more programs to be broadcast next may be included in the second program information.

[0036] Furthermore, when displaying such second program information in a screen, geometric shapes may be used to visualize current time information. In the present embodiments, a vertical line or a horizontal line will be used to visualize current time.

[0037] When the second program information is displayed on a screen, in the case where a list of channels is displayed along the vertical axis of the screen and time information is displayed along the horizontal axis of the screen, a line indicating the current time may be a vertical line (e.g. referring to Fig. 2). In contrast, in the case where a list of channels is displayed along the horizontal axis of the screen and time information is displayed along the vertical axis of the screen, the line indicating the current time may be a horizontal line.

[0038] Referring to FIG. 2, an embodiment of second program information in which a list of channels is displayed along the vertical axis of a screen and time information is displayed along the horizontal axis of the screen will be described below.

[0039] FIG. 2 is a diagram showing a screen of a digital broadcasting receiver, according to an embodiment.

[0040] Referring to FIG. 2, EPG information 210 is displayed on the left side of a main TV screen 200, for example. As described above, users want to find out desired information quickly and easily. In the case of EPG information, information regarding programs currently being broadcast and programs to be broadcast next is information desired by users. However, EPG information is displayed according to either the full EPG method displaying all channels and all programs therein or according to a method of displaying all programs in a current channel. Thus, it is inconvenient for users to move through a plurality of screens to obtain information regarding specific programs currently being broadcast and/or to be broad-

cast next. Furthermore, it is inconvenient for users to switch channels to obtain information regarding programs broadcasted and/or to be broadcast in other channels.

[0041] As shown in FIG. 2, the NOW/NEXT EPG information 210 includes a NOW/NEXT menu 220 and an ALL menu 230 presented as icons. The second program information can be viewed by selecting the NOW/NEXT menu 220, whereas information regarding all programs in a selected channel can be viewed by selecting the ALL menu 230. The ALL menu 230 will be described in detail later by referring to FIG. 5.

[0042] Meanwhile, the arrangement of menus shown in FIG. 2 is merely an example of the present embodiments, and the menus may be arranged otherwise, so long as information regarding programs currently being broadcast and/or to be broadcast next can be displayed with the time line. Furthermore, to minimize viewing interruptions, the NOW/NEXT EPG information 210 may be displayed translucently on a side of the TV screen 200, and the displayed size of the NOW/NEXT EPG information 210 may be adjusted in predetermined proportion to a size of the TV screen. Furthermore, progress information of a program currently being broadcast in each channel may also be displayed, and the progress information may be displayed in a different colour, for example, for easy recognition.

[0043] A vertical NOW line shown in FIG. 2 indicates current time information, which helps the user to determine the progress of programs currently being broadcast in each channel (CNN, BBC, AFKN, etc.) 240 as of the current time and helps to easily determine when the programs will end.

[0044] The NOW/NEXT EPG information 210 displays information regarding programs currently being broadcast and programs to be broadcast next in all channels. Here, the following should be considered when configuring a screen. In the case where time intervals are fixed in the time axis, e.g., 10 minutes or 30 minutes, if a time slot for a program currently being broadcast in a particular channel is significantly longer (e.g. 5 hours) as compared to programs in other channels, information regarding a program to be broadcast next in the corresponding channel may not be displayed due to the physical size of the TV screen 200. As a worst case scenario in the above case, information regarding programs to be broadcast next in all channels may not be displayed in the NOW/NEXT EPG information 210.

[0045] To resolve the above problem, time regions to display information regarding programs to be broadcast next on the screen should be calculated by considering a point of time T1 at which the last program to be broadcast next starts. Descriptions thereof will be given below by referring to FIG. 3.

[0046] FIG. 3 is a flowchart of a method of calculating time intervals for time regions to display information regarding programs to be broadcast next.

[0047] A method of displaying the NOW/NEXT EPG information 210 on a side of a screen according to the present embodiments includes calculating a first point of time T1 at which the last program to be broadcast next starts, and thus information regarding programs to be broadcast next in all channels is displayed on the TV screen based on the calculated first point of time T1, where the programs to be broadcast next will be referred to as second programs hereinafter.

[0048] At this point, instead of calculating a point of time at which the last one of programs to be broadcast next starts, an end point of time at which the last program currently being broadcast ends may be calculated, wherein the programs currently being broadcast will be referred to as first programs hereinafter.

[0049] Referring to FIG. 3, the point of time T1 at which the last one of the programs starts, where the programs are to be broadcasted next in each channel which is displayed on the NOW/NEXT EPG information 210, is calculated (operation 310) .

[0050] Certain regions should be secured to display information, such as titles, regarding programs to be broadcast next including the last one of the programs, on a NOW/NEXT EPG screen. Thus, to calculate such regions, a first time interval D1, which is the difference between a current point of time C and the first point of time T1, is calculated (operation 320). A predetermined rate, which is a user-setting rate of displaying region of the current program to the next program on the screen, e.g. ½, is applied to the calculated first time interval D1 by multiplying the rate by the first time interval D1 to calculate a second time interval D2 (operation 330), and the second time interval D2 is added to the first point of time T1 to calculate a second point of time T2 (operation 340).

[0051] Finally, the time axis of a screen indicating information regarding programs to be broadcast next in each channel is displayed at the second point of time T2 (operation 350). In other words, the last point of time displayed in a screen is the second point of time T2.

[0052] Therefore, the time axis of the NOW/NEXT EPG screen is displayed by using the current point of time C and the second point of time T2, and information regarding programs currently being broadcast and programs to be broadcast next may be arranged and displayed along the time axis.

[0053] Thus, regardless of points of time at which programs to be broadcast next start, the size of the NOW/NEXT EPG information 210 displayed on a side of the TV screen 200 may be maintained constantly, and information regarding programs currently being broadcast and programs to be broadcast next may be presented regardless of a time slot arrangement of the original EPG.

[0054] Here, values of the predetermined rate may be, for example, ½, etc. However, the rate may be any value used to calculate the last point of time T2 of a time axis according to proportion of the NOW/NEXT EPG information 210 in the screen. Thus, a value of the rate may be changed according to the NOW/NEXT EPG information 210 arrangements, and the displaying size of the NOW/

NEXT EPG information 210 may be changed according to a change of the rate.

[0055] FIG. 4 is a flowchart of an interface operation using EPG information displayed on a screen of a digital broadcasting receiver, according to another embodiment.

[0056] Referring to FIG. 4, the NOW/NEXT EPG information 210 may be displayed according to a user event, and operations as shown in FIG. 4 may be performed thereafter according to additional user events.

[0057] For example, when a user event switching to EPG screen mode is received by pressing an EPG key (operation 410), the NOW/NEXT EPG information 210 may be arranged and displayed on a side of the TV screen 200 instantly (operation 420).

[0058] Next, it is determined whether or not a user pressed either a UP key or a DOWN key (operation 430), for example, and brief information and/or a registered preview image of a corresponding program is presented (operation 450).

[0059] If a user pressed a hot key such as the EPG key after selecting a particular program in the EPG screen, it may be switched to a brief program information mode (operation 460). After the switching, as shown in FIG. 5, brief program information 510 is displayed.

[0060] Furthermore, it may be determined whether or not an EXIT key is pressed (operation 470). If the EXIT key is pressed, it may be switched back to a normal TV viewing mode from the EPG screen mode. Here, it is clear that the UP/DOWN keys may be replaced by other directional keys such as LEFT/RIGHT keys disposed on a user interface device for controlling a digital broadcasting receiver.

[0061] FIG. 5 is a diagram showing an example of brief EPG information of a channel, according to another embodiment.

[0062] Referring to FIG. 5, brief EPG information 510 displays information regarding all programs in a channel of a currently selected program for all time slots. At this point, an ALL menu 530 is activated and displayed instead of a NOW/NEXT menu 520.

[0063] If a currently selected channel is CNN as indicated by a reference number 540 in FIG. 5, arrows to the left and right of the name of the channel show that there are more successive channels, thus indicating that a user can obtain information regarding programs in all channels (e.g., BBC, AFKN, KBS, etc.) by using directional keys such as LEFT/RIGHT keys.

[0064] Hereinafter, interface operations using such brief EPG information 510 will be described by referring to FIG. 6.

[0065] FIG. 6 is a flowchart of an interface operation using brief EPG information, according to another embodiment.

[0066] After a particular program is selected while the NOW/NEXT EPG information 210 is displayed, if either an EPG key or a hot key regarding brief EPG information is pressed, a brief EPG information screen, which displays information regarding all programs in a current channel along either the horizontal axis or the vertical axis of a screen, is displayed (operation 610).

[0067] For example, if it is determined that either an UP key or a DOWN key is pressed (operation 620), a focus moves in the brief EPG information. If a focus is located on information regarding a program currently being broadcast (operation 640), a pop-up window to choose whether to record the program or not is displayed (operation 660).

[0068] Furthermore, if recording is already in progress, a pop-up window to choose whether or not to cancel the recording may be displayed. When a focus is located on information regarding a program to be broadcast after the current time, a pop-up window to choose whether or not to reserve recording and whether or not to remind a viewer about a desired program is displayed (operation 670). Again, a pop-up menu to choose whether to cancel the choices may be displayed if the choices are already made.

[0069] Meanwhile, in the brief EPG information 540 of CNN, for example, shown in FIG. 5, if either a LEFT key or a RIGHT key is pressed, information regarding all programs in either a previous channel or a next channel (e.g., BBC, AFKN, etc.) is displayed in the same arrangement in a screen (operation 650). Furthermore, a TV screen may be switched if a program currently being broadcast in the switched channel is selected.

[0070] Meanwhile, it may be determined whether or not an EXIT key is pressed (operation 680), and the operations described above may be repeated. Here, the UP/DOWN/LEFT/RIGHT keys may be replaced by other directional keys disposed on a user interface device for controlling a digital broadcasting receiver.

[0071] FIG. 7 is a functional block diagram of an apparatus 700 to display EPG information on a screen of a digital broadcasting receiver, according to another embodiment.

[0072] Referring to FIG. 7, the apparatus 700 includes an EPG storage unit 705 obtaining EPG information, an EPG extracting unit 710 extracting information regarding programs in all channels from obtained EPG information, a NOW/NEXT EPG generating unit 715 generating NOW/NEXT EPG information, which is formed of information regarding programs currently being broadcast and programs to be broadcast next in each channel, based on extracted information, and a screen display unit 720 displaying generated NOW/NEXT EPG information and either a vertical line or a horizontal line indicating the current time.

[0073] Furthermore, the screen display unit 720 may further include a time processing unit 720-1 to calculate a first point of time T1 (which is a point of time at which a last second program in a channel starts), calculating a first time interval D1 (which is a difference between a current point of time C and the first point of time T1), calculating a second time interval D2 (which is calculated by applying a predetermined rate to the first time interval

D1), and calculating a second point of time T2 (which is calculated by adding the second time interval D2 to the first point of time T1) .

[0074] Furthermore, the apparatus 700 may further include a first program selecting unit 725 to select a program in channels displayed on a NOW/NEXT EPG information screen by using directional keys disposed on a user interface device to control a digital broadcasting receiver, and may further include a pop-up displaying unit 730 to display brief EPG information and/or related images regarding a selected program as pop-up windows.

[0075] The apparatus 700 may further include a channel selecting unit 735 to select a first channel by using hot-keys disposed on the user interface device, and may further include a brief EPG information displaying unit 740 to display program information regarding all programs in the selected first channel, per time slot.

[0076] Here, the brief EPG information displaying unit 740 may further include a program information switching unit 740-1 to switch the content of the brief EPG screen from program information of the first channel to program information of a second channel, which may be a channel either previous or next to the first channel.

[0077] Meanwhile, the apparatus 700 may further include a second program selecting unit 745 to select a predetermined program from displayed brief EPG information, a function setting unit 750 to set a recording function, a reserve recording function, or a reminding function with respect to a selected program, and a screen switching unit 755 to switch a screen of a digital broadcasting receiver by tuning to a program currently being broadcast.

[0078] According to various embodiments, users can always obtain information regarding programs currently being broadcast and programs to be broadcast next, which is EPG information most demanded by users, regardless of broadcasting program arrangements, and can determine when a program will start or end. Furthermore, viewing interruptions can be minimized.

[0079] Furthermore, even in the case of the brief EPG providing information regarding all programs in a current channel, information regarding programs in the current channel and previous/next channels can be easily obtained without operating a separate window or a tuner.

[0080] In addition, other embodiments can also be implemented through computer readable code/instructions in/on a medium, e.g., a computer readable medium, to control at least one processing element to implement any above described embodiment. The medium can correspond to any medium/media permitting the storage and/or transmission of the computer readable code.

[0081] The computer readable code can be recorded/transferred on a medium in a variety of ways, with examples of the medium including recording media, such as magnetic storage media (e.g., ROM, floppy disks, hard disks, etc.) and optical recording media (e.g., CD-ROMs, or DVDs). Thus, the medium may be such a defined and measurable structure including or carrying a signal or information, such as a device carrying a bitstream according to one or more embodiments. The media may also be a distributed network, so that the computer readable code is stored/transferred and executed in a distributed fashion. Furthermore, the processing element could include a processor or a computer processor, and processing elements may be distributed and/or included in a single device.

[0082] It should be understood that the exemplary embodiments described herein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each embodiment should typically be considered as available for other similar features or aspects in other embodiments.

Claims

1. A method of providing broadcasting program information on a screen of a digital broadcasting receiver, the method comprising:

obtaining electronic program guide (EPG) information received by the digital broadcasting receiver;
extracting first program information from the obtained EPG information, the first program information being program information with respect to all channels;
generating second program information based on the first program information, the second program information being information regarding first programs currently being broadcast and second programs to be displayed next in each of the channels; and
displaying the generated second program information and a vertical line or a horizontal line indicating a current time on the screen.

2. The method of claim 1, wherein the displaying of the generated second program information and the line indicating the current time further comprises calculating a first point of time at which a last second program in each of the channels starts, the generated second program information being displayed translucently on the screen to display program information regarding second programs in all channels, based on the first point of time.

3. The method of claim 2, wherein the displaying of the generated second program information and the line indicating the current time further comprises:

calculating a first time interval by determining a difference between the current time and the first point of time;
calculating a second time interval by multiplying a predetermined rate and the calculated first

time interval;
calculating a second point of time by adding the second time interval to the first point of time; and
displaying a horizontal time axis of a screen displaying the second program information within the second point of time.

4. The method of claim 3, wherein the screen of the second program information is adjusted according to a predetermined proportion ratio in the displaying of the generated second program information and the line indicating the current time.

5. The method of any one of the preceding claims, further comprising:

receiving an input from a user using directional keys disposed on a user interface device to control the digital broadcasting receiver to select a first program or a second program in a channel from the second program information; and
displaying at least one of program information and related images regarding the selected first program or the second program as pop-up windows.

6. The method of claim5, further comprising:

receiving an input from a user using hot-keys disposed in a user interface device to select a first channel from among channels with respect to the first program or the second program; and
displaying third program information including information regarding all programs in the selected first channel for all time slots on the screen.

7. The method of claim6, further comprising replacing the displayed third program information by displaying fourth program information including information regarding all programs in a second channel for all time slots in response to the user using the directional keys disposed on the user interface device, the second channel being a channel before or after the first channel.

8. The method of claim 7, further comprising:

receiving an additional input from the user using the directional keys to select a third program in a channel in a time slot from the third program information or the fourth program information; and
setting a recording function, a reserve recording function, or a remind function with respect to the selected third program.

9. The method of claim 8, further comprising switching a screen of the digital broadcasting receiver by tuning to the first program or the third program, when the first program or the third program is currently being broadcast.

10. An apparatus to provide broadcasting program information on a screen of a digital broadcasting receiver, the apparatus comprising:

an electronic program guide (EPG) storage unit obtaining EPG information;
an EPG extracting unit extracting first program information from the obtained EPG information, the first program information being program information with respect to all channels;
a NOW/NEXT EPG generating unit generating second program information from the extracted first program information, the second program information being information regarding first programs currently being broadcast and second programs to be displayed next in each of the channels; and
a screen display unit displaying the generated second program information and a vertical line or a horizontal line indicating a current time in the screen.

11. The apparatus of claim 10, wherein the screen display unit further comprises a time processing unit calculating a first point of time at which a last second program in a channel starts, the second program information being displayed translucently on the screen to display program information regarding second programs in all channels, based on the first point of time.

12. The apparatus of claim 11, wherein the time processing unit calculates a first time interval by determining a difference between the current time and the first point of time, calculates a second time interval by multiplying a predetermined rate and the calculated first time interval, and calculates a second point of time by adding the second time interval to the first point of time, and the screen display unit displays a horizontal time axis of a screen displaying the second program information within the second point of time.

13. The apparatus of claim 12, wherein the screen display unit adjusts the screen of the second program information according to a predetermined proportion ratio.

14. The apparatus of claim 12, wherein the screen display unit displays progress information of first programs currently being broadcast in each channel.

15. The apparatus of claim 12, further comprising:

a first program selecting unit selecting a first program or a second program in channels displayed on a NOW/NEXT EPG information screen in response to an input by a user using directional keys disposed on a user interface device to control the digital broadcasting receiver; and
a pop-up displaying unit displaying at least one of program information and related images regarding the selected first program or the second program as pop-up windows;
a channel selecting unit selecting a first channel from among channels with respect to the first program or the second program in response to an input from a user using hot-keys disposed on the user interface device; and
a brief EPG information displaying unit displaying third program information regarding all programs in the selected first channel for all time slots;

wherein the brief EPG information displaying unit further comprises a program information switching unit switching from the displayed third program information to display fourth program information including information regarding all programs in a second channel for all time slots in response to the user using the directional keys disposed on the user interface device in the screen, the second channel being a channel before or after the first channel; the apparatus further comprising:

a second program selecting unit selecting a third program in a channel in a time slot from the third program information or the fourth program information in response to an additional input from a user using the directional keys; and
a function setting unit setting a recording function, a reserve recording function, or a remind function with respect to the selected third program; and a screen switching unit switching a screen of the digital broadcasting receiver by tuning to the first program or the third program when the first program or the third program is currently being broadcast.

FIG. 1

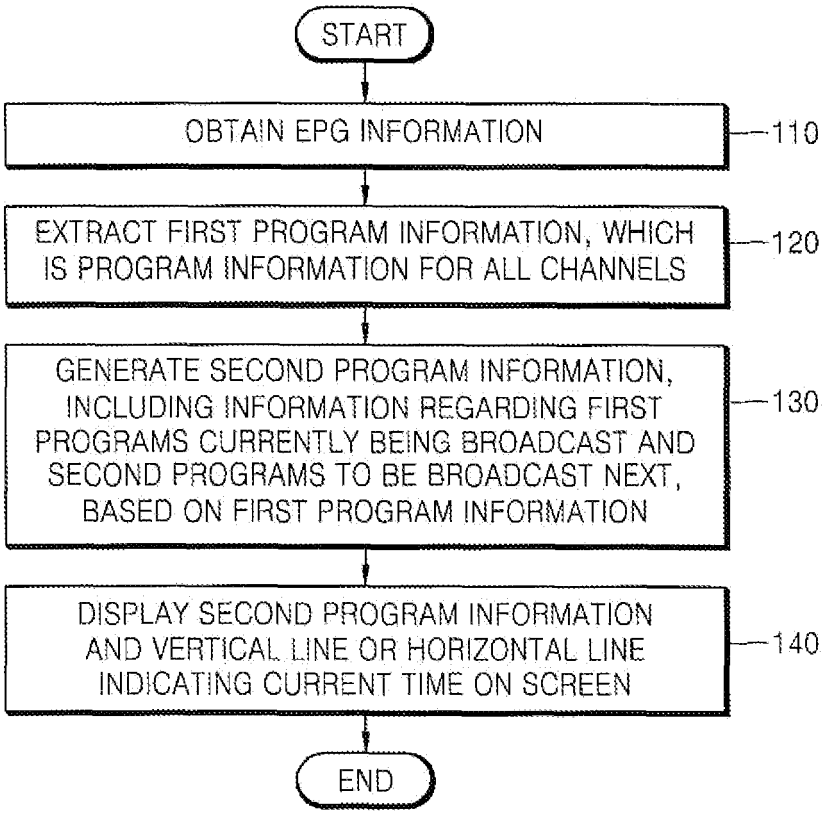

START
OBTAIN EPG INFORMATION
110
EXTRACT FIRST PROGRAM INFORMATION, WHICH IS PROGRAM INFORMATION FOR ALL CHANNELS
120
GENERATE SECOND PROGRAM INFORMATION, INCLUDING INFORMATION REGARDING FIRST PROGRAMS CURRENTLY BEING BROADCAST AND SECOND PROGRAMS TO BE BROADCAST NEXT, BASED ON FIRST PROGRAM INFORMATION
130
DISPLAY SECOND PROGRAM INFORMATION AND VERTICAL LINE OR HORIZONTAL LINE INDICATING CURRENT TIME ON SCREEN
140
END

FIG. 2

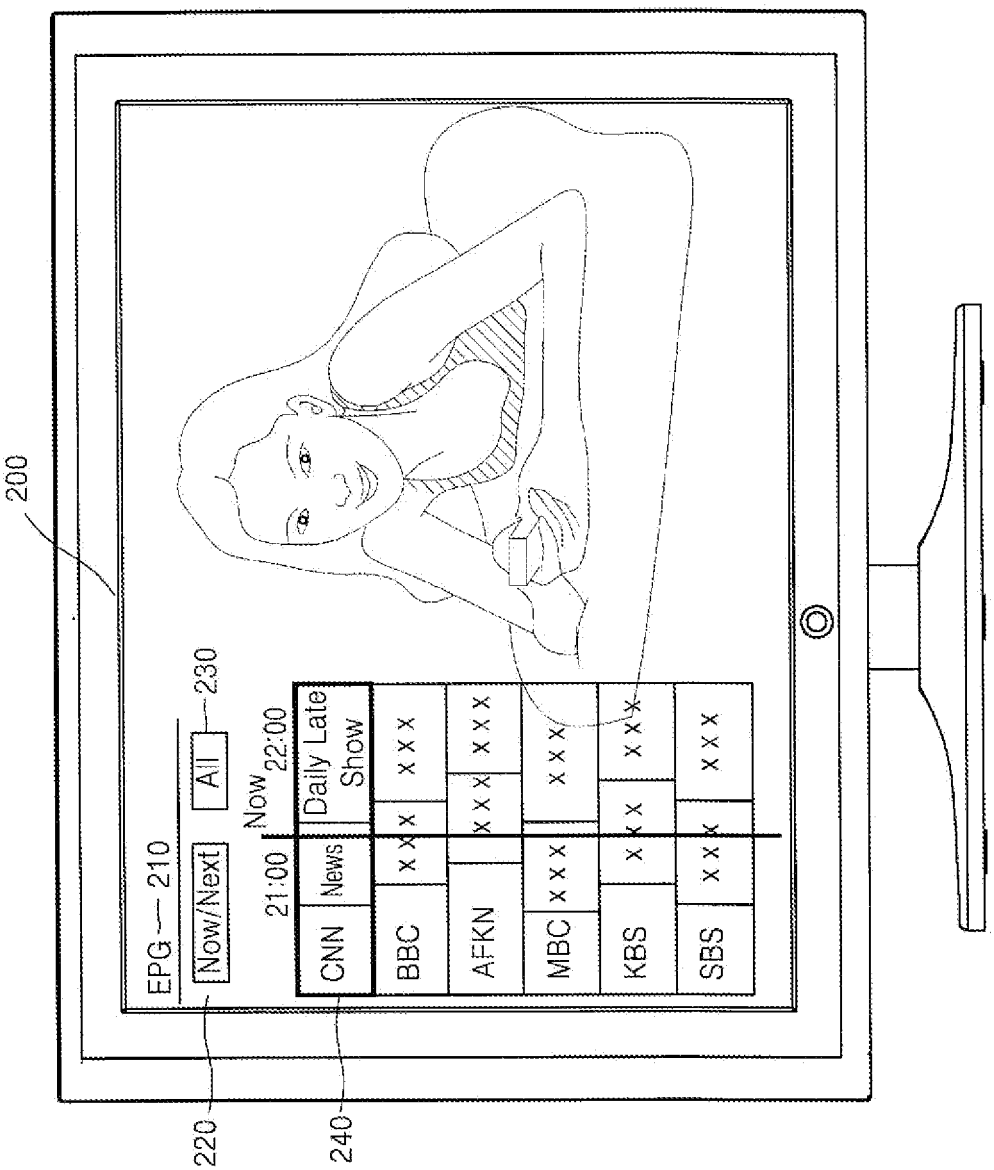

200
EPG
210
Now/Next
All
230
Now
21:00
22:00
Daily Late Show
CNN
News
BBC
AFKN
MBC
KBS
SBS
220
240

FIG. 3

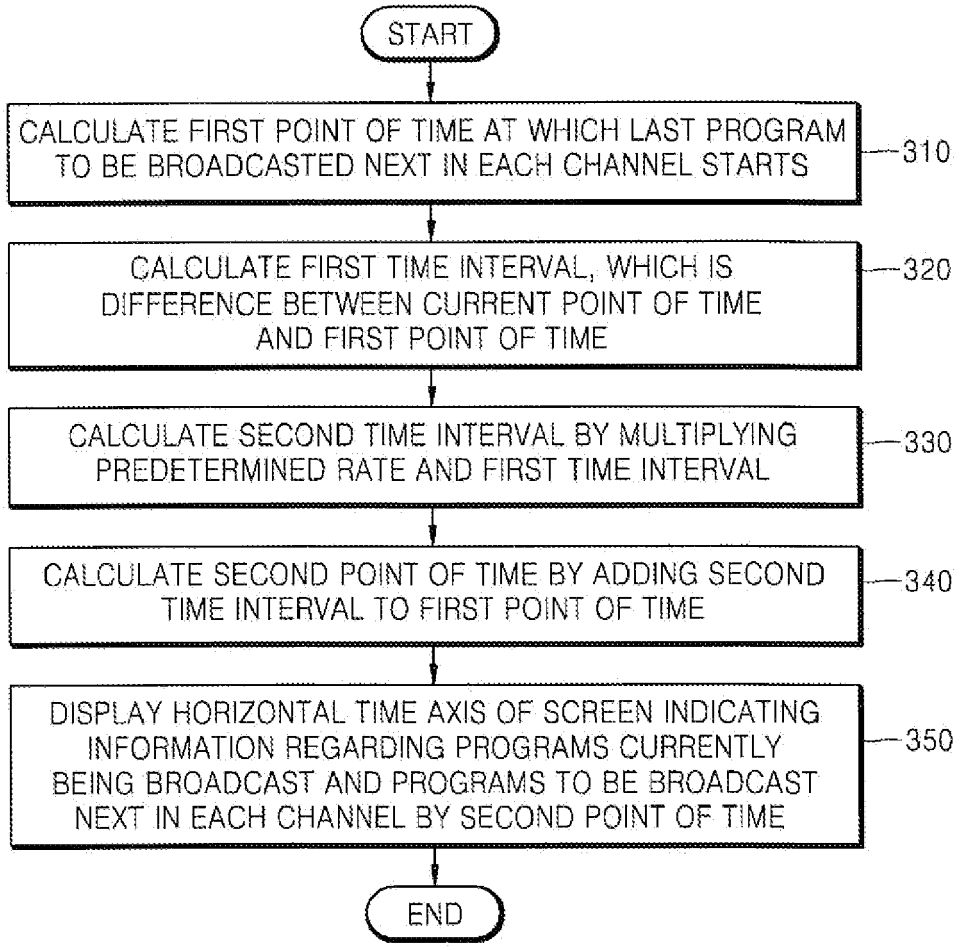

START
CALCULATE FIRST POINT OF TIME AT WHICH LAST PROGRAM TO BE BROADCASTED NEXT IN EACH CHANNEL STARTS
310
CALCULATE FIRST TIME INTERVAL, WHICH IS DIFFERENCE BETWEEN CURRENT POINT OF TIME AND FIRST POINT OF TIME
320
CALCULATE SECOND TIME INTERVAL BY MULTIPLYING PREDETERMINED RATE AND FIRST TIME INTERVAL
330
CALCULATE SECOND POINT OF TIME BY ADDING SECOND TIME INTERVAL TO FIRST POINT OF TIME
340
DISPLAY HORIZONTAL TIME AXIS OF SCREEN INDICATING INFORMATION REGARDING PROGRAMS CURRENTLY BEING BROADCAST AND PROGRAMS TO BE BROADCAST NEXT IN EACH CHANNEL BY SECOND POINT OF TIME
350
END

FIG. 4

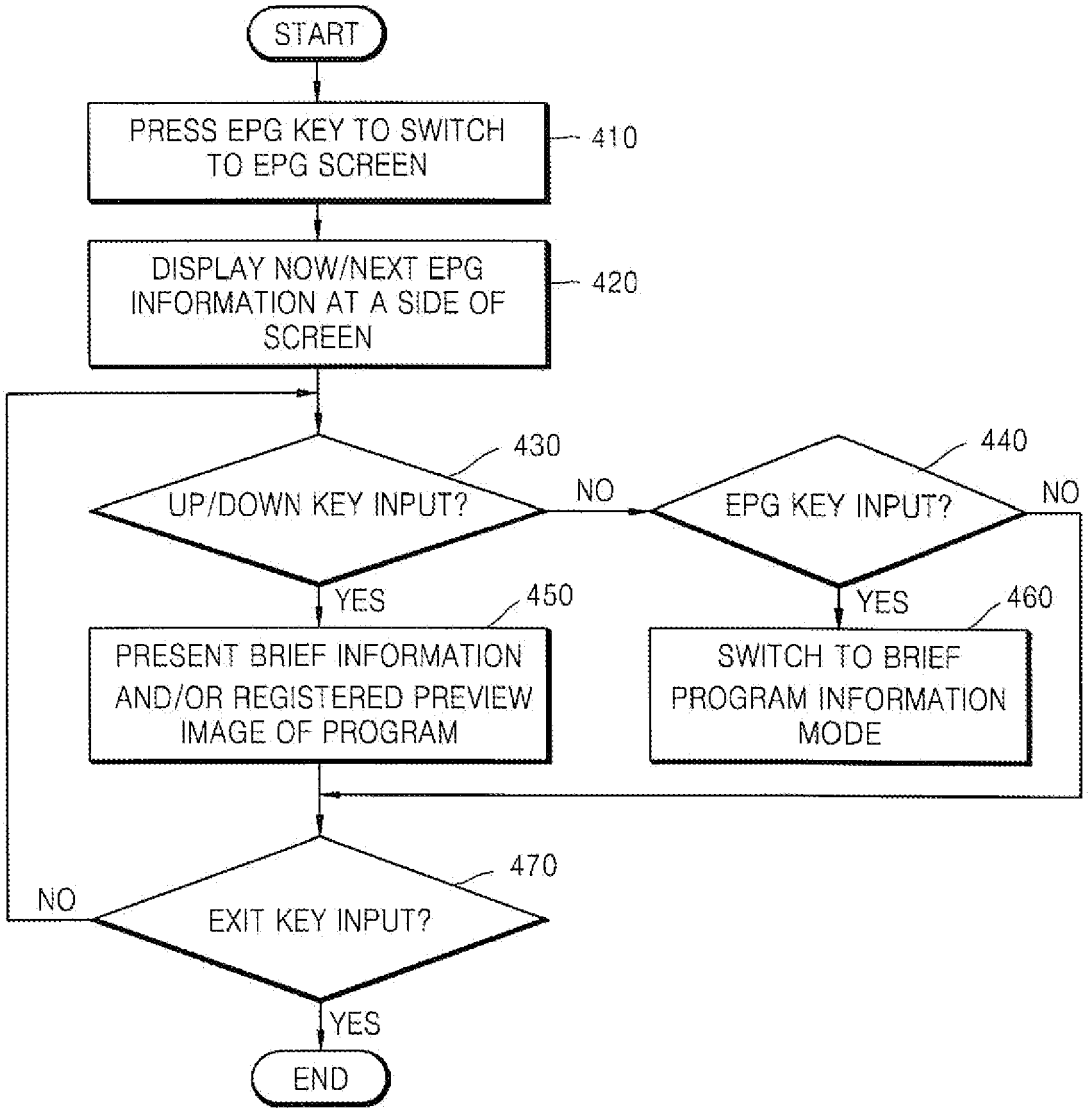

START
PRESS EPG KEY TO SWITCH TO EPG SCREEN
410
DISPLAY NOW/NEXT EPG INFORMATION AT A SIDE OF SCREEN
420
430
UP/DOWN KEY INPUT?
NO
440
EPG KEY INPUT?
NO
YES
450
PRESENT BRIEF INFORMATION AND/OR REGISTERED PREVIEW IMAGE OF PROGRAM
YES
460
SWITCH TO BRIEF PROGRAM INFORMATION MODE
470
NO
EXIT KEY INPUT?
YES
END

FIG. 5

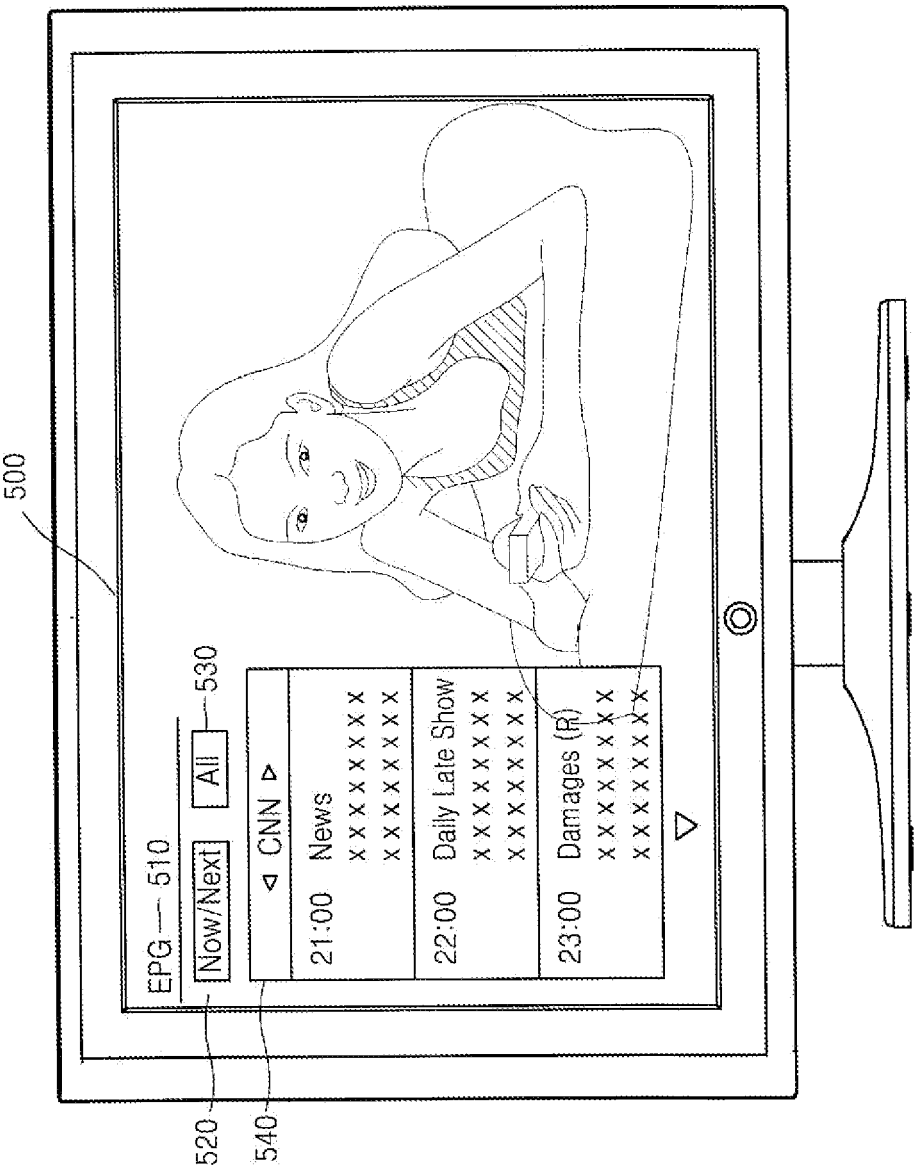

500
EPG
510
Now/Next
All
530
CNN
21:00 News
22:00 Daily Late Show
23:00 Damages (R)
520
540

FIG. 6

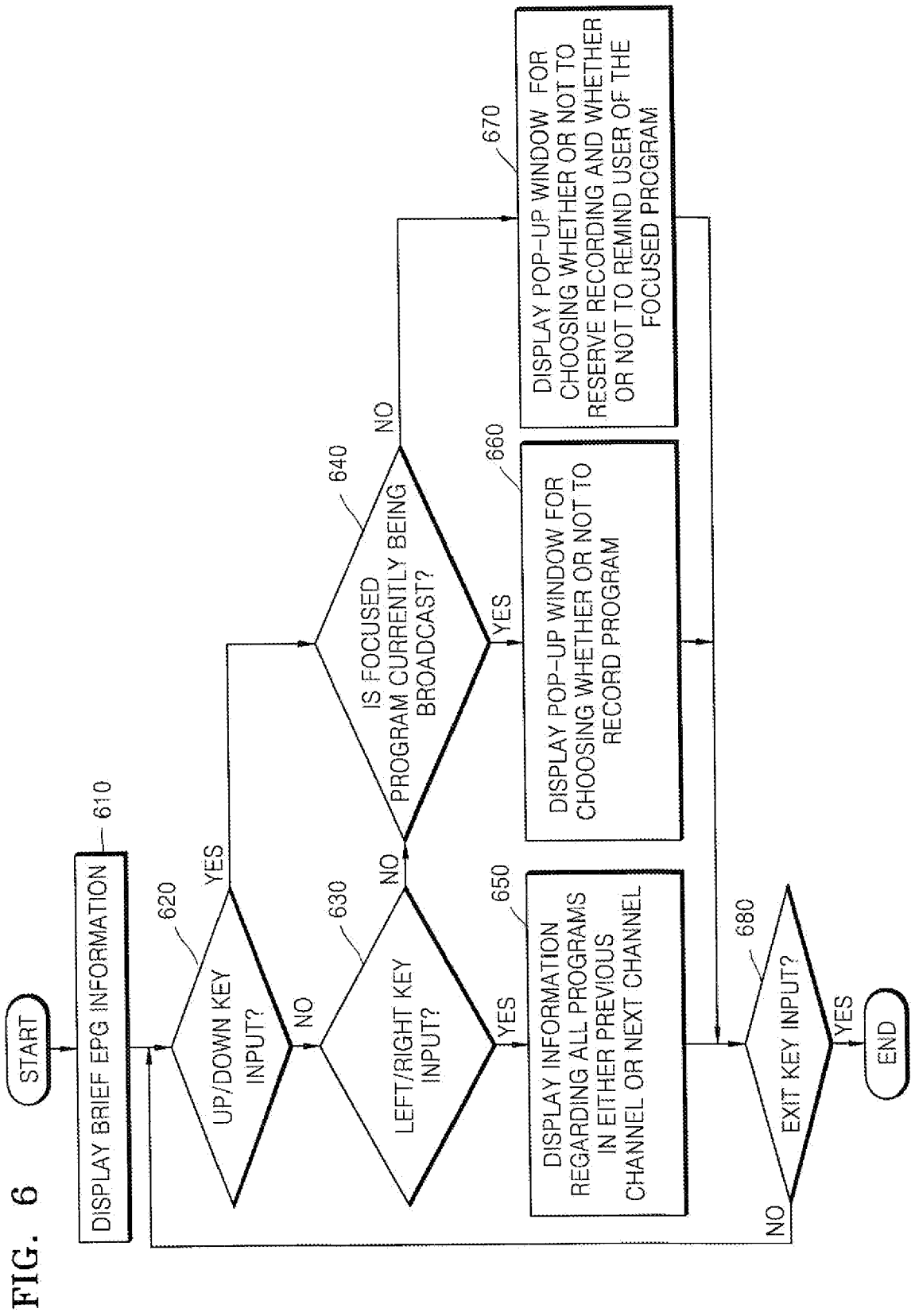
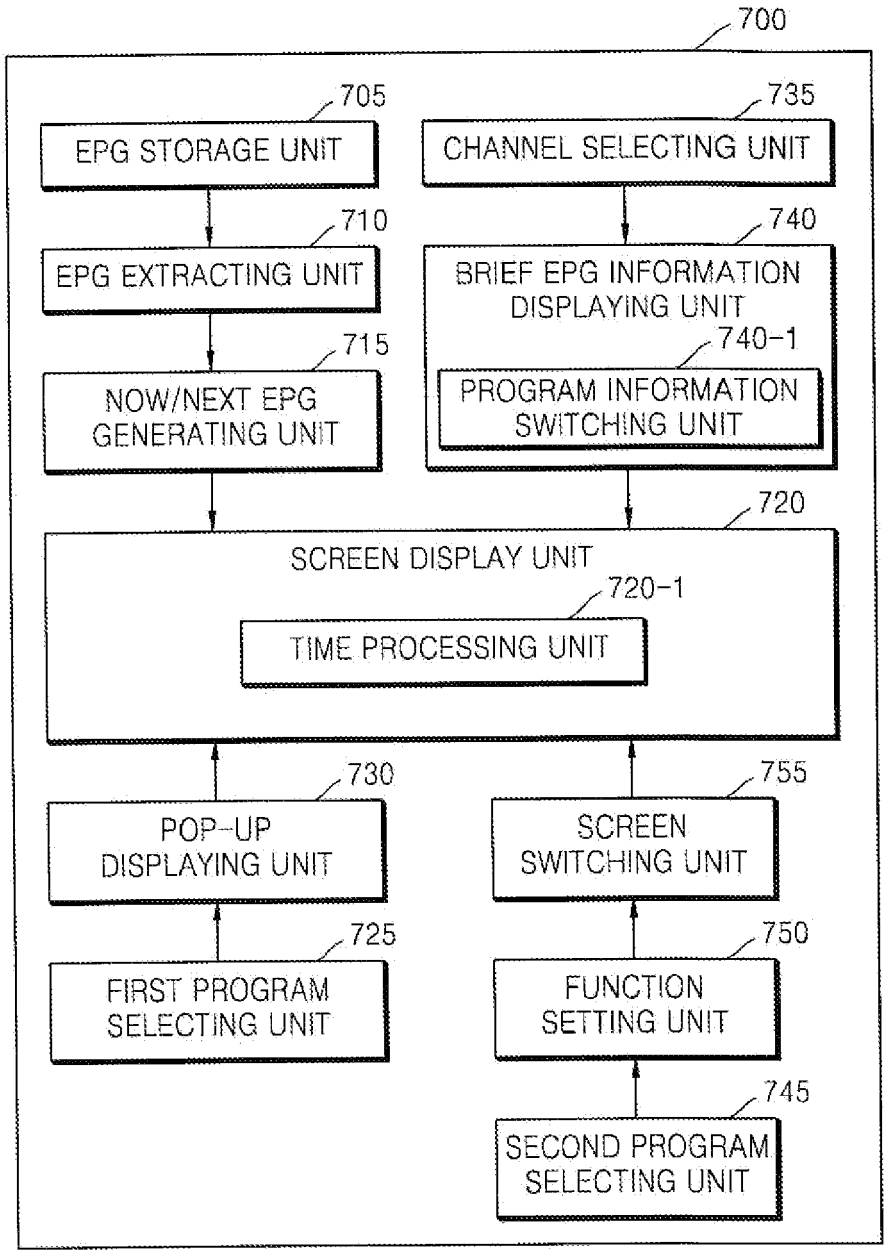

START
DISPLAY BRIEF EPG INFORMATION
610
UP/DOWN KEY INPUT?
620
YES
NO
LEFT/RIGHT KEY INPUT?
630
YES
NO
IS FOCUSED PROGRAM CURRENTLY BEING BROADCAST?
640
YES
NO
DISPLAY INFORMATION REGARDING ALL PROGRAMS IN EITHER PREVIOUS CHANNEL OR NEXT CHANNEL
650
DISPLAY POP-UP WINDOW FOR CHOOSING WHETHER OR NOT TO RECORD PROGRAM
660
DISPLAY POP-UP WINDOW FOR CHOOSING WHETHER OR NOT TO RESERVE RECORDING AND WHETHER OR NOT TO REMIND USER OF THE FOCUSED PROGRAM
670
EXIT KEY INPUT?
680
YES
NO
END

FIG. 7


700
705
EPG STORAGE UNIT
735
CHANNEL SELECTING UNIT
710
EPG EXTRACTING UNIT
740
BRIEF EPG INFORMATION DISPLAYING UNIT
740-1
PROGRAM INFORMATION SWITCHING UNIT
715
NOW/NEXT EPG GENERATING UNIT
720
SCREEN DISPLAY UNIT
720-1
TIME PROCESSING UNIT
730
POP-UP DISPLAYING UNIT
755
SCREEN SWITCHING UNIT
725
FIRST PROGRAM SELECTING UNIT
750
FUNCTION SETTING UNIT
745
SECOND PROGRAM SELECTING UNIT