



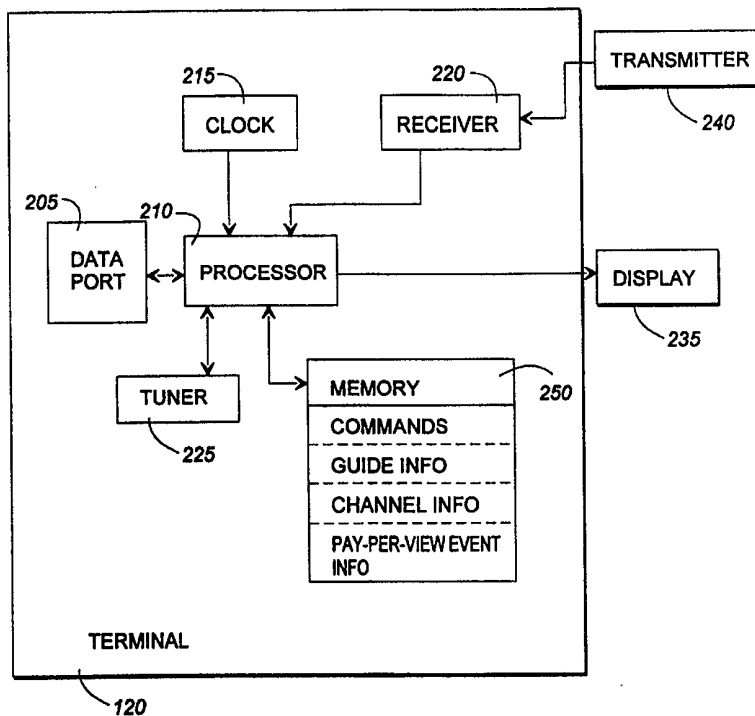
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US99/09274 (22) International Filing Date: 29 April 1999 (29.04.99) (30) Priority Data: 09/071,697 1 May 1998 (01.05.98) US (71) Applicant: SCIENTIFIC-ATLANTA, INC. [US/US]; Hubert J. Barnhardt III, Intellectual Property Dept., One Technology Parkway South, Norcross, GA 30092 (US). (72) Inventors: LOSSNER, Marcus, O.; 5370 Spotted Fawn Court, Suwanee, GA 30024 (US). SCHLARB, John, M.; 2040 North Creek Circle, Alpharetta, GA 30004 (US). ZHANG, Shuhua; 9775 Knollcrest Boulevard, Alpharetta, GA 30022 (US). (74) Agents: BARNHARDT, Hubert, J., III et al.; Scientific-Atlanta, Inc., Intellectual Property Dept., One Technology Parkway South, Norcross, GA 30092 (US).	(81) Designated States: BR, JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.	

(54) Title: METHOD AND APPARATUS FOR PAY-PER-VIEW PROGRAM GUIDE

(57) Abstract

A cable television system (100) includes a display (235) for displaying Pay-Per-View (PPV) program information and a terminal (120) for controlling the presentation of the Pay-Per-View program information. In accordance with commands received by the terminal (120), the display (235) is driven to present all of the PPV program information on a single screen. The PPV program information includes a list of PPV programs, times associated with the programs, descriptions of the programs, and video displays of information related to the programs, all on the single screen of the display (235).



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METHOD AND APPARATUS FOR PAY-PER-VIEW PROGRAM GUIDE

FIELD OF THE INVENTION

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This invention relates generally to television systems, and more specifically to program guides for such systems.

BACKGROUND OF THE INVENTION

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Cable television systems transmit television signals to system subscribers. Cable television systems typically include a headend for receiving and demodulating the satellite signals to baseband and combining them with other television programming signals, then transmitting the signals via communication media to subscriber equipment that tunes into television channels for display to the subscriber. The signals to the subscriber can be transmitted, for instance, over coaxial cables, fiber optic cables, or a combination of the two, and taps situated along the communication media split off the signals to provide subscriber drops. Signals to a subscriber can be provided directly to a cable-ready television, a cable-ready video cassette recorder (VCR), or a set top terminal connected to a television or other display device, such as a computer.

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Many cable television systems provide television program information to subscriber equipment so that the subscriber can view the program information on the television itself. This program information is typically organized for presentation purposes into a program guide format that presents the program information by time and channel. The program guide can, for instance, automatically scroll through the available television channels to present the program information, such as name and description, at the current time. However, many systems can provide hundreds or even thousands of channels. In such systems, scanning program information can require hundreds of keystrokes by the subscriber and can consume a tremendous amount of time.

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Pay-Per-View (PPV) programs generate additional revenue for the cable operators. Methods to market and provide information allowing subscribers to purchase this programming is limited. PPV information about a specific program or event is generally advertised on the channel that will subsequently show that program or event. Purchasing information about a specific program or event is typically also shown on the channel that is to show the program or event. As a result, the subscriber often must tune to all or most of the available channels to locate a particular PPV program and its ordering information. Even in cable systems that offer program guides, the subscriber must usually first locate information about a PPV program in a program guide that presents information about all programming, then tune to the indicated channel or refer to a

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separate paper television guide to determine how to order the program and to view a description of the program. In many systems, the subscriber has to perform the additional step of tuning to another menu or screen application or of placing a telephone call to purchase the desired program. It can be seen that these conventional methods for presenting PPV information and for permitting the purchase of PPV programs are not efficient or easy since the subscriber often must perform multiple operations and view multiple screens of information to view a PPV program.

Thus, what is needed is an improved way to view, scan, and purchase PPV program information in a cable television system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a cable television system in accordance with the present invention.

FIG. 2 is an electrical block diagram of a set top terminal included in the cable television system of FIG. 1 in accordance with the present invention.

FIG. 3 is an illustration of a PPV program guide screen that can be generated for display by the set top terminal of FIG. 2 in accordance with the present invention.

FIG. 4 is an example of a PPV program guide screen that can be generated for display by the set top terminal of FIG. 2 in accordance with the present invention.

FIG. 5 is a top view of a transmitter, such as a remote control, that can be used by a subscriber to transmit commands to the set top terminal of FIG. 2 in accordance with the present invention.

FIGs. 6 and 7 are flowcharts illustrating an operation of a processor included in the set top terminal of FIG. 2 in accordance with the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

FIG. 1 is a block diagram of a cable television system 100 including a headend 105 for receiving satellite television signals, demodulating the signals down to baseband, combining the signals with other television programming signals, and transmitting the combined signals over the system 100. The transmitted signals can, for instance, be radio frequency (RF) signals, although they are more preferably optical signals that are transmitted over a communication medium such as fiber optic cable 125. When optical signals are transmitted by the headend 105, one or more nodes 110 are included in the system 100 for converting the optical signals to RF signals that are thereafter routed over other media, such as coaxial cables 130. Taps 115 are

provided within the cable system 100 for splitting the RF signal off to subscriber equipment, such as set top terminals 120, cable-ready televisions, video cassette recorders (VCRs), or computers.

Referring next to FIG. 2, a block diagram of the terminal 120 and other system equipment is shown. The terminal 120 is typically situated within the residence or business of the subscriber. It may be integrated into a device that has a display 235, such as a television set, or it may be a stand-alone unit that couples to an external display 235, such as a display included in a computer or a television, and that processes television signals for presentation to a subscriber on the display 235. The terminal 120 preferably comprises a data port 205 for receiving the RF signals, which can include video, audio, and data information, from the tap 115 and for providing any reverse information to the tap 115 for transmission back to the headend 105. The terminal 120 further includes a processor 210 for controlling operations of the terminal 120 and for driving the display 235, a clock 215 for providing timing functions, and a tuner 225 for tuning into a particular television channel to be displayed. Additionally, the terminal 120 includes a receiver 220 for receiving externally-generated information, such as user inputs or commands from other devices. User inputs could, for example, be provided via a controller or transmitter 240, such as buttons or keys located on the exterior of the terminal 120 or a handheld remote control device that includes user-actuated buttons.

A memory 250, such as a non-volatile random access memory, coupled to the processor 210 stores operational parameters, such as commands that are recognized by the processor 210. The memory 250 also stores program information that can, for instance, be downloaded over the system 100 to the terminal 120. The program information includes program guide information that is displayed to the subscriber in the format of a program guide including a listing of channels, programs for viewing on the channels, and times during which the programs are shown. The program information also includes channel information, such as the channel number and identification information, e.g., ESPN, Disney, WXIA, etc.. According to the present invention, the program information additionally includes program information for a Pay-Per-View (PPV) program guide. The program information preferably includes a Pay-Per-View program guide including all available program titles, available starting times of the programs, a detailed description of the programs, the cost of the programs, the phone number (if required) to contact and purchase the program, a video window, and (if available) a purchase or buy button to purchase the programming. The video window can provide information about the PPV programs such as "trailers" of upcoming movies, interviews with actors and directors, still picture of the currently highlighted PPV program, video clips of the currently highlighted PPV program, or any other video or still picture information to arouse subscriber interest in purchasing the PPV

programming. Alternately, the video window, if present, could present any other video information of interest to the subscriber.

Preferably, the terminal 120 periodically downloads program information into memory 250 from the headend 105 (FIG. 1). It will be appreciated that the amount of information that can be downloaded and the time between downloads vary according to memory size. When, for instance, the cable television system 100 provides access to hundreds or thousands of cable television channels, program information, including programs and times may be downloaded more often than when the system 100 provides fewer channels. The terminal 120 can also receive updated program information as needed, such as when the cable channel lineup is changed or when the PPV programming changes. One of ordinary skill in the art will understand that various components of the all channel program guide and the PPV program guide information, such as information on available viewing times, could be stored solely in the memory 250, as opposed to the headend 105. Storage of the PPV information in the memory 250 can be accomplished in a variety of conventional ways, such as in the form of a subset of the regular program guide, but other storage methods could be employed instead.

Regular program guide information can be displayed to the subscriber in a number of ways. For instance, the display 235 can be driven to present a conventional program guide that provides automatic scrolling of programs in alphabetical sequence along with the descriptions, times, and cost associated with the programs. Alternatively, a static display can be provided, and the subscriber can provide commands, such as via the transmitter 240, to scroll through the program information. In either situation, the large number of channels creates a problem because viewing program information to locate PPV programming can be very time consuming for the subscriber. Additionally, if program information viewing is not automatic, the subscriber may be required to execute a large number of keystrokes to present the PPV program information.

The terminal 120 according to the present invention solves this problem by providing a mode in which only program information associated with PPV programming is presented to the subscriber. More specifically, the subscriber can conveniently select the PPV program guide, from which the subscriber can view the available programming, associated start times, and descriptive information associated with the PPV programming,, and also purchase the programming.

FIG. 3 illustrates a screen of information 302, according to the present invention, that could be presented on the display 235 to provide PPV program information to the subscriber. This screen shows the presentation of PPV programming in the form of an events list 304, in which an event 306 of interest can be highlighted. The events list 304 can be organized in a variety of

ways, such as but not limited to, alphabetically listing the available events or listing events based on the latest addition. The events list 304 can, for instance, be scrolled through using the up and down buttons 440, 445 on the remote control transmitter 240 (FIG. 5). The on-screen event navigation icons 308 that illustrate the use of the up and down buttons 440, 445 to the subscriber, are displayed as a navigation guide to the subscriber. Alternatively, text directions or other instructions could be used. The associated start time 310 for the highlighted event is preferably also displayed on the same screen. The initial start time displayed could be the next start time, later than the current time as input by clock 215, or another start time related to the highlighted event 306. Time navigation icons 312 can provide a navigation guide for the subscriber to use the left and right buttons 450, 455 on the remote control transmitter 240 to provide user input and therefore to scroll through the available start times associated with the highlighted event 306. Alternatively, other types of instructions, such as text directions could be used.

The description 314 of the highlighted event 306 can be displayed to provide additional information to the subscriber. This information could include a summary of the event, length of event, cost, rating, or other information. Video information 316 can be displayed to present marketing and visual information to the subscriber. Video clips of current or upcoming events or of the highlighted event, still pictures from the highlighted event or other events, promotional text, and picture-in-picture of the last viewed channel are among the many possible items that can be displayed in the video information 316 display. A purchase key 318 can be present to allow the subscriber to purchase the desired event. This key 318 can include a phone number to call, text instructions, a graphical navigation icon, another method, or combination of methods to direct the subscriber in purchasing the desired event from the same screen with the PPV program information. For example, a graphical icon including text could direct the subscriber to press a special icon/function key, shown as a "B" 475 (FIG. 5), to buy the impulse PPV highlighted event 306 at the highlighted time 310. It will be appreciated that the use of a PPV guide according to the present invention conveniently allows the consolidation of the event list, the start time list, event descriptions, video/marketing information, and purchasing information on a single screen for easier subscriber use and easier marketing of the PPV events.

FIG. 4 shows the presentation of an example of an actual PPV screen according to the present invention, with a highlighted event 406, an associated description 414, an associated video clip 416, and a purchase key 418 in the form of a graphical icon with text.

As mentioned above, user inputs could be provided by a remote control transmitter 240, such as that shown in FIG. 5. Such a transmitter 240 might include an on/off key 420, a program key 430 for inputting programming commands, page up/down keys 425, 435, scrolling keys 440,

445, 450, 455, a select key 460 for selecting a highlighted option, special icon/function keys 470, 475, 480, and a numerical keypad 465 for inputting numerical information. However, other input means could alternatively be provided. For instance, a different remote transmitter 240 could be used to highlight and select menu options presented to the subscriber on the display 235, keys on the terminal 120 itself could be used, or commands could be entered via a keyboard, keypad, or computer coupled to the terminal 120.

Referring next to FIGs. 6 and 7, flowcharts illustrate an operation of the processor 210 (FIG. 2) of the terminal 120 for providing a pay-per-view (PPV) program guide according to the present invention. When, at step 604 (FIG. 6), the processor 210 receives a "display PPV guide" command from the receiver 220, it drives the display 235 to present the PPV guide, at step 606. When an event command is then received, at step 608 the processor 210 drives, at step 610, the display 235 to highlight the event indicated by the received event command. The processor 210 then determines the next event start time for presentation on the display 235, at step 612, and drives, at step 614, the display of the image related to the highlighted event and the description of highlighted event. The processor 210 next receives a further command, at step 616, and proceeds to determine if the command is an event command. At step 702 (FIG. 7). If, at step 702, the received command is an event command, the processor 210 returns to step 610 (FIG. 6). If the processor 210 determines, at step 704, that the command is a time selection command, the processor 210 drives the display 235 to show a previous or a next start time of the highlighted event according to the instructions in the received command 706. Processing then proceeds to step 616 (FIG. 6) for reception of the next command. If the command is not a time selection command, at step 704, the processor 210 determines, at step 708, if the command is a purchase command. If the command is not a purchasing command, the processor 210 returns to performing other services, at step 710. If the command is determined to be a purchase command, at step 708, the processor 210 provides, at step 712, purchase information to the data port 205 (FIG. 2) for transmission to the head-end 105 (FIG. 1) and drives, at step 714, the display 235 to indicate to the subscriber the event that has been purchased, its start time, its channel, and other relevant information.

It will be appreciated that the methods described in FIGs. 6 and 7 for displaying information, viewing events, viewing start times, purchasing events, and interfacing with the PPV program guide can be performed in many other ways and that the exact steps illustrated in FIGs. 6 and 7 need not be followed. Purchasing could, for instance, be accomplished via a phone call in a one-way system.

In summary, the cable television system as described above includes subscriber equipment that has Pay-Per-View (PPV) program, information, and purchasing functions. According to the present invention, a listing of the available PPV events, associated start times, the PPV program description, and purchasing information can be advantageously displayed via a single screen. As
5 a result, PPV programs can be located and marketed in a much easier manner than could be done in prior art systems because there has been provided an improved way to view and scan PPV program information in a cable television system.

What is claimed is:

CLAIMS

- 1 1. A terminal for providing program information to a display in a cable television system,
2 the terminal comprising:
3 a memory for storing program information about all pay-per-view (PPV) programs that
4 can be purchased by a subscriber of the cable television system for presentation on the display,
5 the program information including at least program names of all the PPV programs that can be
6 purchased, program times associated with the PPV programs, and purchasing information
7 associated with the PPV programs; and,
8 a processor coupled to the memory for providing the program information to the display
9 for presentation thereby on a single screen.
- 1 2. The terminal of claim 1, wherein the display is external to the terminal.
- 1 3. The terminal of claim 1, wherein the display is included in the terminal.
- 1 4. The terminal of claim 1, wherein the purchasing information includes instructions for
2 purchasing a selected PPV program.
- 1 5. The terminal of claim 1, further including:
2 a data port coupled to the processor for receiving radio frequency signals from the cable
3 television system, the radio frequency signals including the program information for storage in
4 the memory.
- 1 6. The terminal of claim 1, further including:
2 a tuner coupled to the processor for tuning to a selected channel, in response to which
3 the processor drives the display to present a program associated with the selected channel.
- 1 7. The terminal of claim 6, further including:
2 a tuner coupled to the processor for tuning to information related to one or more of the
3 PPV programs, wherein the processor provides the information for display on the single screen
4 with the program information.
- 1 8. The terminal of claim 1, further including a clock coupled to the processor for providing
2 timing functions.

1 9. The terminal of claim 1, further including:
2 control means for providing user inputs to the processor, the user inputs indicative of a
3 selected PPV program of all the PPV programs and a selected start time.

1 10. The terminal of claim 9, further including:
2 receiving means for receiving a further user input in accordance with the purchasing
3 information displayed on the single screen, the further user input resulting in purchase of the
4 selected PPV program at the selected start time.

1 11. A terminal for providing program information to a display in a cable television system,
2 the terminal comprising:
3 a memory for storing pay-per-view (PPV) program information about all PPV programs
4 that can be purchased by a subscriber of the cable television system, the PPV program
5 information including all PPV program names, all PPV program times, and all PPV purchasing
6 information ;
7 a receiver coupled to the memory for receiving a user input indicative of a selected PPV
8 program and a selected PPV program time; and
9 a processor coupled to the memory and the receiver for activating the display to present
10 the PPV program information on a single screen and for transmitting information indicative of
11 the selected PPV program and the selected PPV program time over the cable television system to
12 enable a purchase of the selected PPV program at the selected PPV program time.

1 12. The terminal of claim 11, further comprising:
2 control means for providing further user inputs, responsive to which the processor
3 activates the display to scroll through the PPV program information.

1 13. The terminal of claim 11, further including:
2 control means for providing user-controllable scrolling, on the display, through the PPV
3 program times associated with a selected program.

1 14. The terminal of claim 11, further including:
2 control means for providing a further user input responsive to which a description of the
3 selected PPV program is displayed.

1 15. The terminal of claim 11, wherein the PPV purchasing information includes displayable
2 information that can be selected by the subscriber to purchase the selected PPV program at the
3 selected PPV program time.

1 16. A cable television system for providing program information to a subscriber thereof, the
2 cable television system comprising:
3 a distribution system for distributing television signals and information through the
4 cable television system;
5 a display for displaying, on a single screen, pay-per-view (PPV) program information
6 about all PPV programs that can be purchased by a subscriber of the cable television system, the
7 PPV program information including program names of all the PPV programs, PPV times
8 associated with the PPV programs, and PPV purchasing information for the PPV programs; and
9 a terminal coupled to the distribution system for processing the television signals, the
10 terminal comprising:
11 a memory for storing PPV program information; and
12 a processor coupled to the memory for driving the display.

1 17. The cable television system of claim 16, further comprising:
2 a controller for providing user inputs, responsive to which the processor activates the
3 display to select one of the PPV programs, a PPV program time of which is then displayed on the
4 single screen.

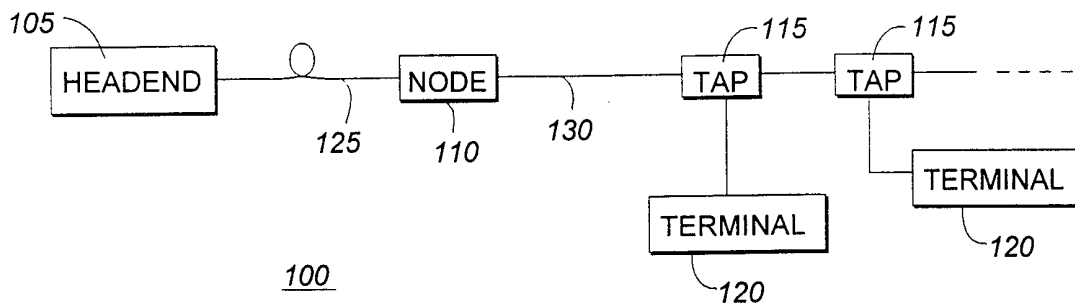
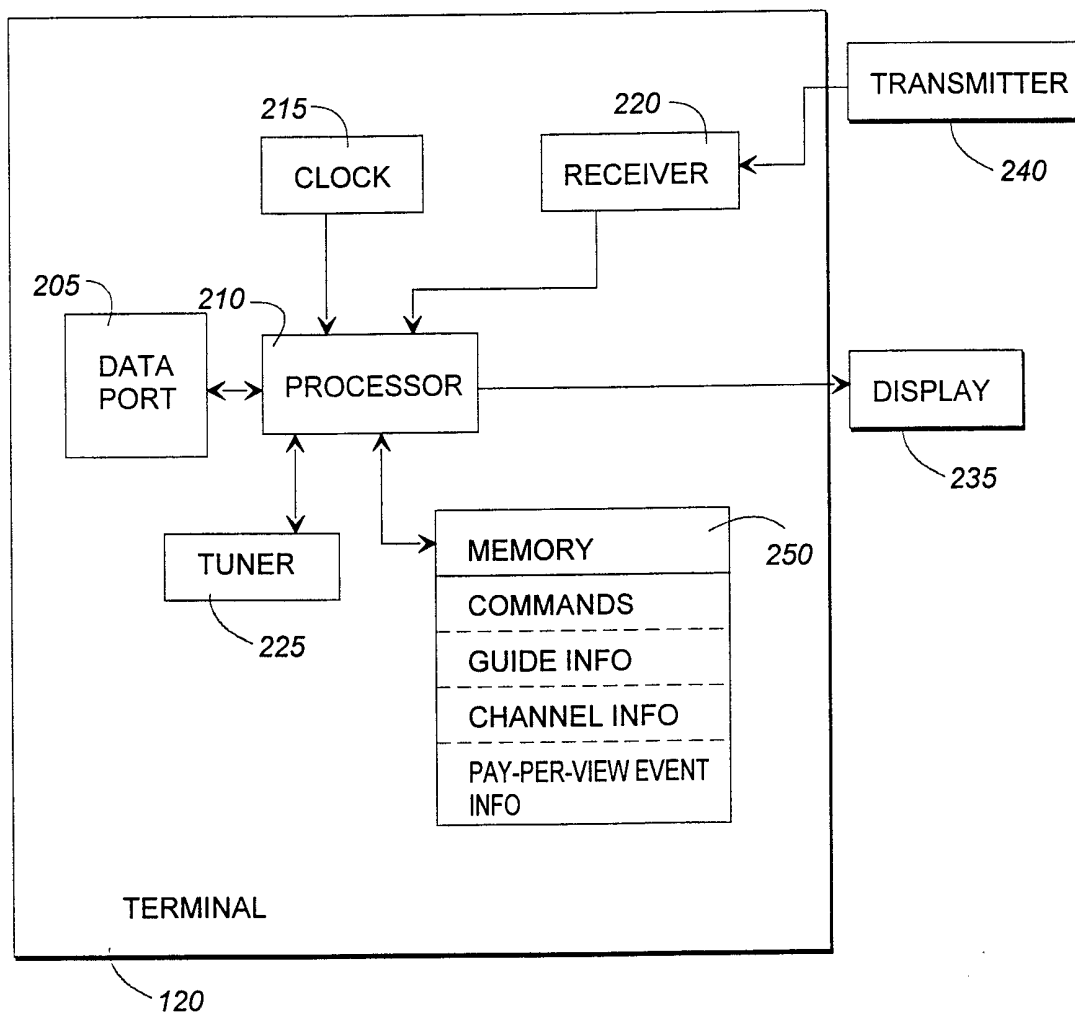
1 18. The cable television system of claim 16, further including:
2 a remote control for providing user inputs to control the terminal, the user inputs
3 including information for scrolling through the PPV program information associated with the
4 PPV programs and for scrolling through the PPV program times.

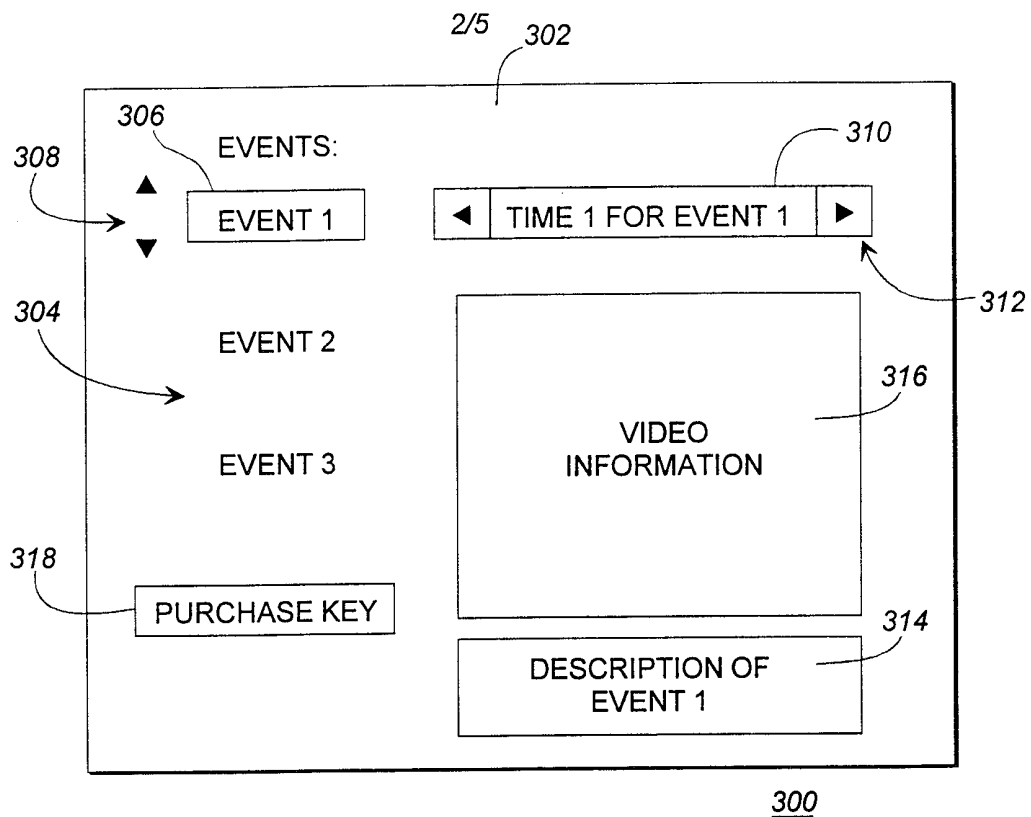
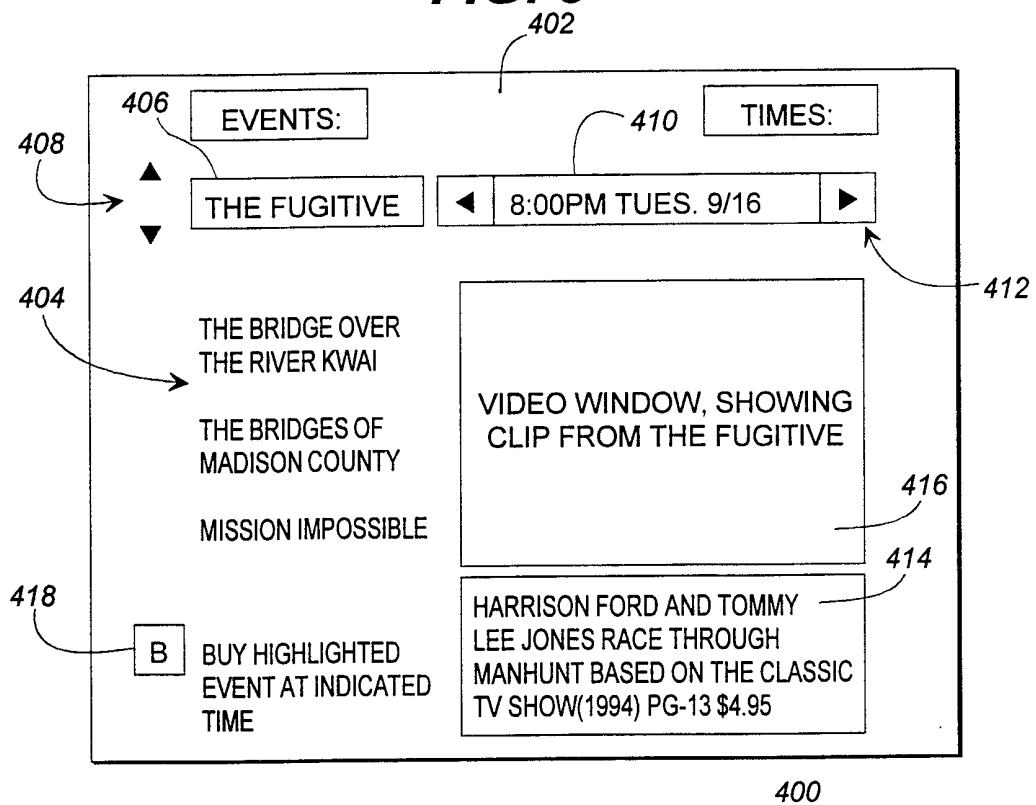
1 19. A method for providing Pay-Per-View (PPV) program information associated with PPV
2 programs to a subscriber of a cable television system including a display for displaying the PPV
3 program information, a terminal for controlling the presentation of the PPV program information,
4 a memory for storing operational parameters, and a receiver for receiving user inputs, the method
5 comprising the steps of:
6 storing the Pay-Per-View (PPV) program information, including PPV program names,
7 PPV program times, and PPV purchasing information;
8 receiving a user input indicating that the PPV program information is to be presented;
9 and;
10 driving the display to present the PPV program information on a single screen.

1 20. The method of claim 19, further comprising, subsequent to the driving step, the steps of:
2 receiving a user input indicative of a selected PPV program;
3 highlighting the selected PPV program on the display; and
4 driving the display to present a start time for the selected PPV program.

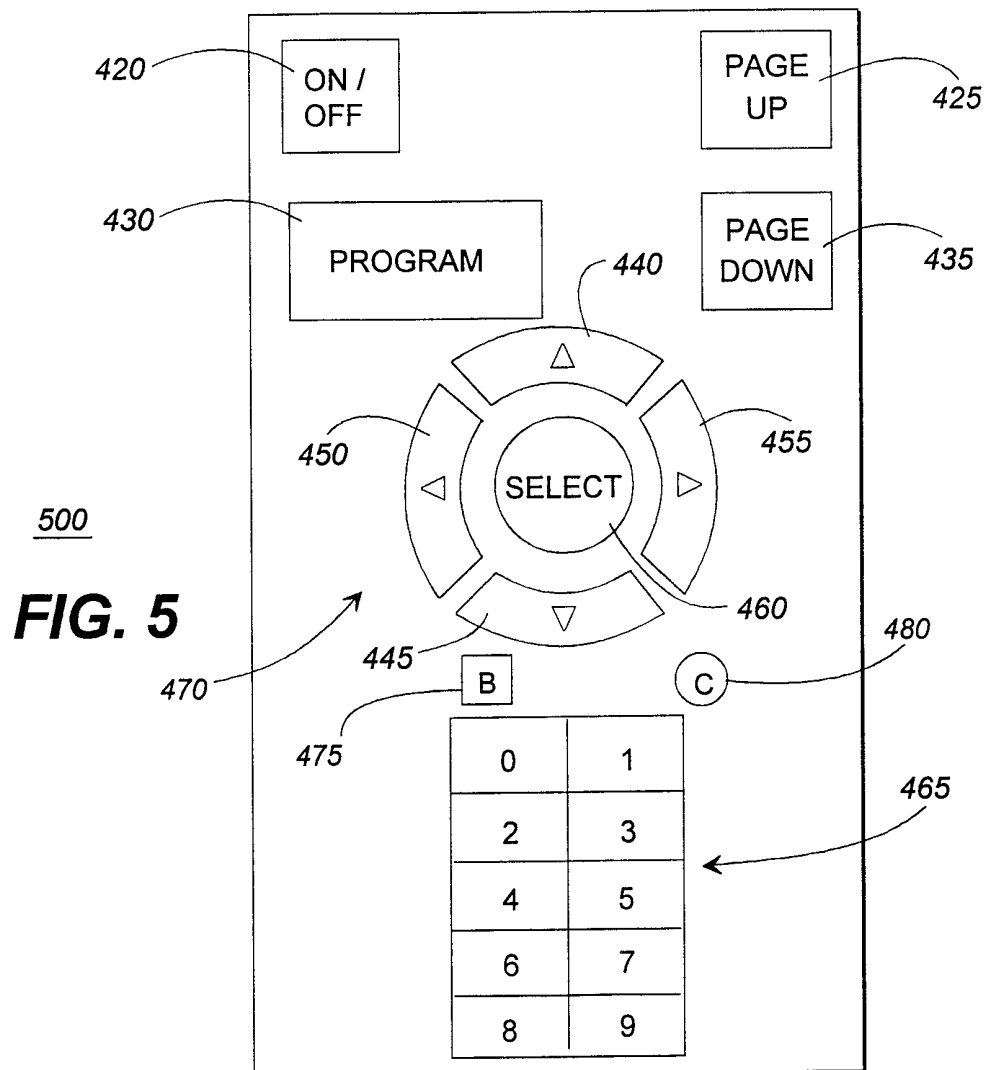
1 21. The method of claim 20, further comprising the steps of:
2 receiving a user input indicative of a selected PPV program time for the selected PPV
3 program;
4 receiving a user input indicating that the selected PPV program at the selected PPV
5 program time is to be purchased; and
6 transmitting information, indicating that the selected PPV program at the selected PPV
7 program time is to be purchased, over the distribution system.

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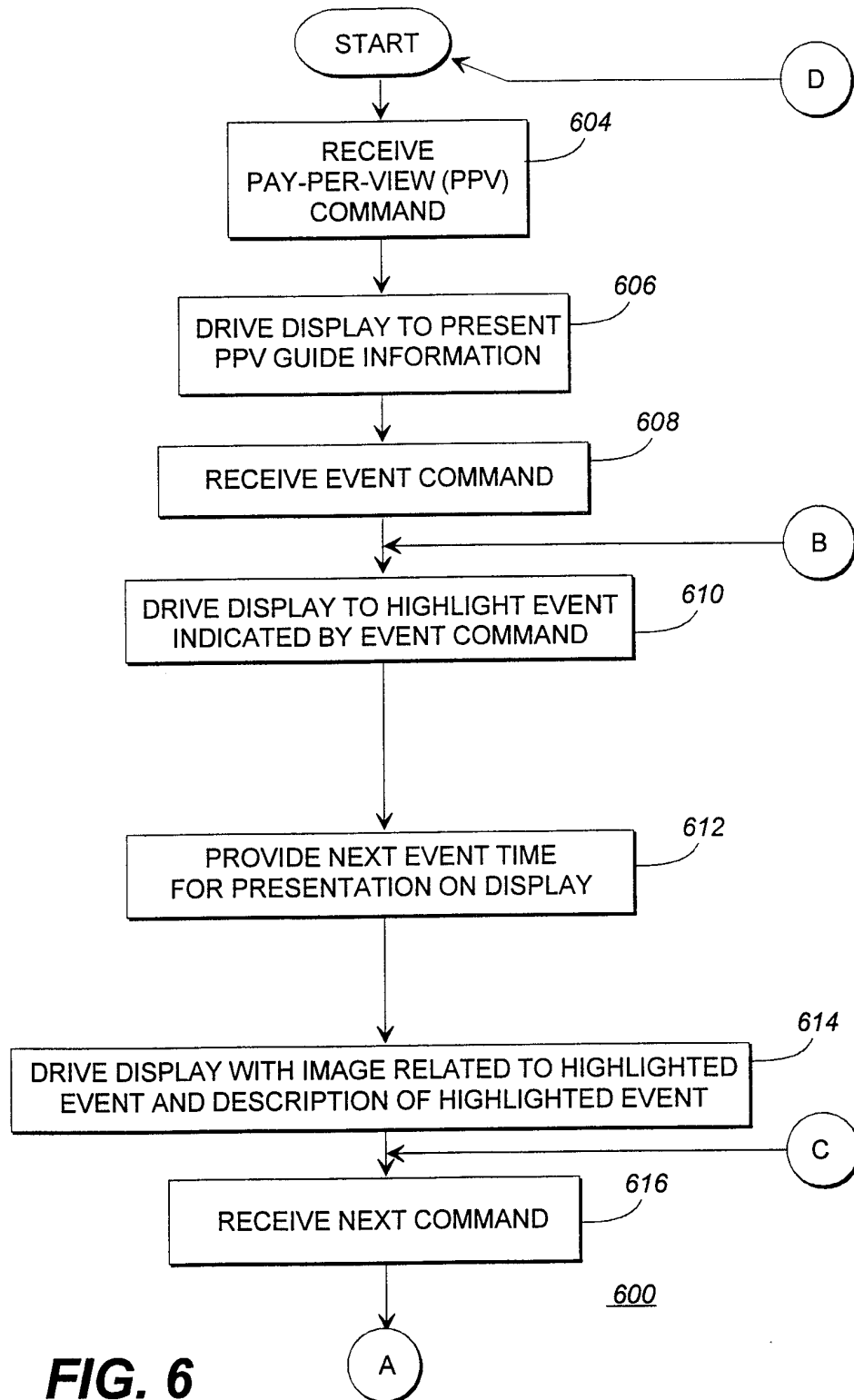
**FIG. 1****FIG. 2**

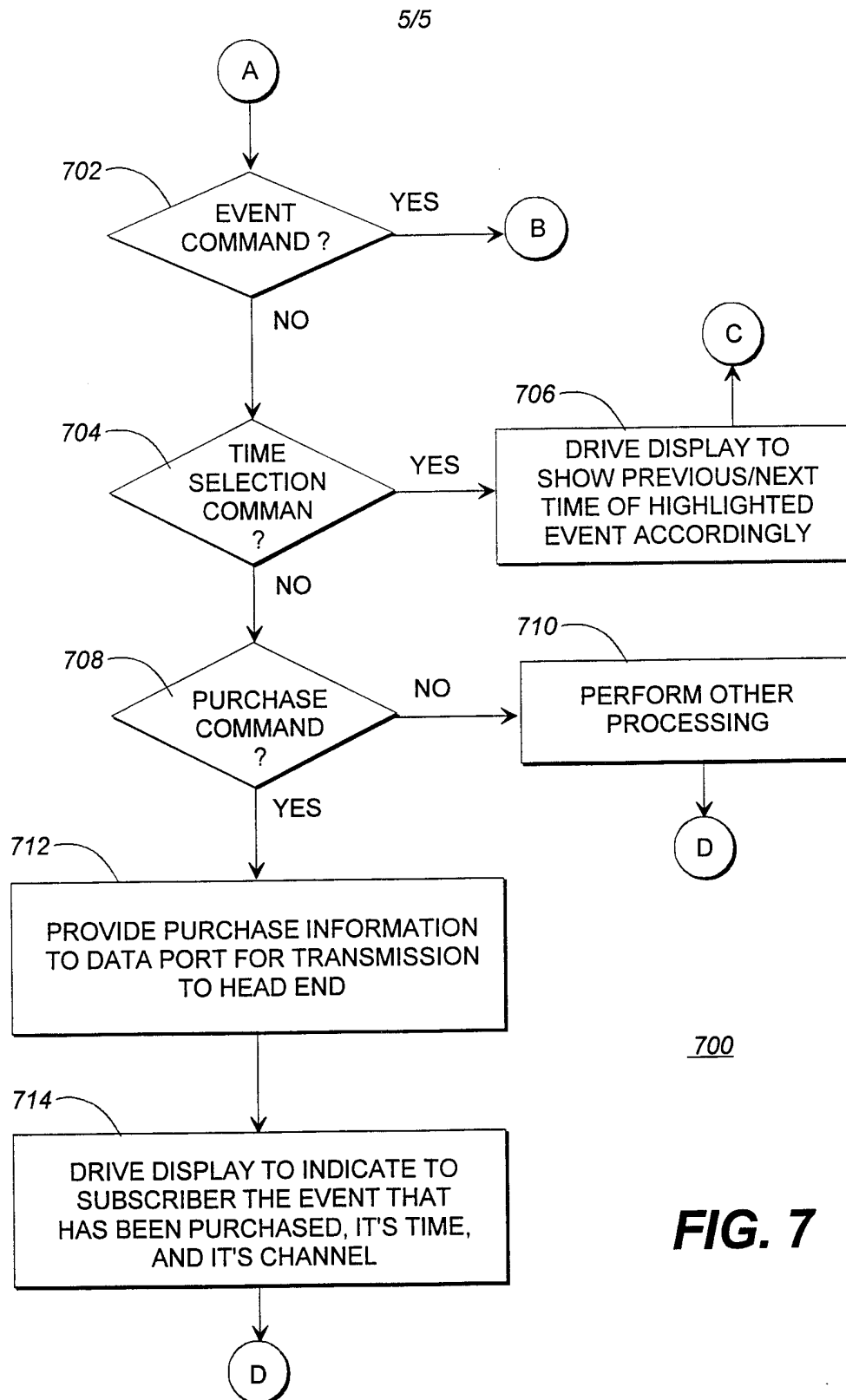
**FIG. 3****FIG. 4**

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**FIG. 6**

**FIG. 7**

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/09274

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04N7/16

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 6 H04N

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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 41478 A (TV GUIDE ON SCREEN) 19 December 1996 (1996-12-19) page 7, line 23 - page 8, line 26 page 12, line 26 - page 14, line 3 page 16, line 18 - page 26, line 30 figures 1-58 ---	1-21
X	US 5 734 853 A (BERKOBIN ERIC C ET AL) 31 March 1998 (1998-03-31) column 3, line 21 - column 4, line 37 column 11, line 10 - column 18, line 51 figures 1-30 -----	1,2,4-21



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search

9 August 1999

Date of mailing of the international search report

16/08/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Van der Zaal, R

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/09274

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