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(54) Title: SYSTEM AND METHOD FOR STAGING A HOME COMMUNICATION TERMINAL TO SET DEFAULT SYSTEM PARAMETERS

STAGING SYSTEM 200
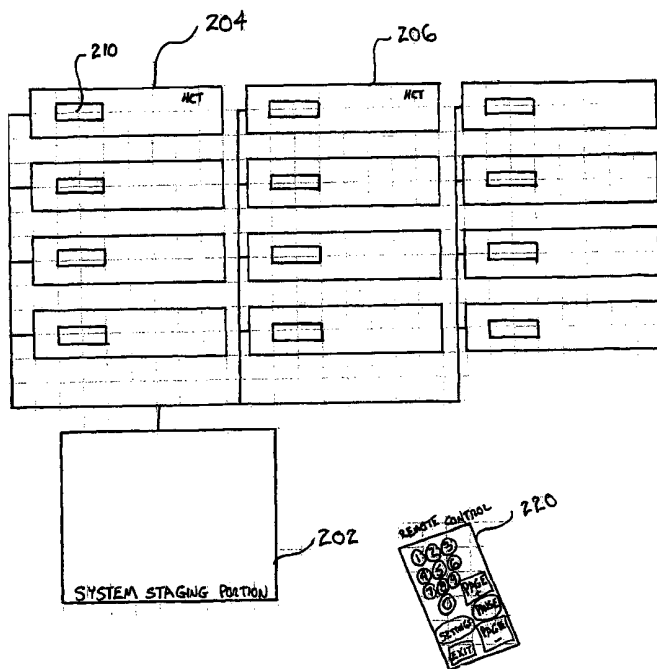
(57) Abstract: A system and method for staging home communication terminals and setting them to a uniform initialized state for distribution to subscribers of a subscriber television system. The system and method for staging allows multiple home communication terminals received from suppliers or returned from subscribers to be initialized to standardized settings for the subscriber television system in which they will be used.

SYSTEM AND METHOD FOR STAGING A HOME COMMUNICATION TERMINAL TO SET DEFAULT SYSTEM PARAMETERS

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CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to U.S. Provisional Patent Application Number 60/170302, Jerding et al., entitled *Home Communication Terminal Resident Application*, filed 13 December 1999.

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FIELD OF THE INVENTION

This present invention relates to the staging of home communication terminals in a

15   subscriber television system and, more specifically, to the setting of a home communication terminal (HCT) to the default system settings prior to installing the HCT into the system.

BACKGROUND OF THE INVENTION

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In a subscriber television system, analog set-top boxes typically allowed just a few simple options. Recently, however, digital programming has become a reality and the home communication terminal ("HCT"), otherwise known as the set-top box, has become a powerful computing device for accessing video services, and navigating a user through the maze of

25   available services. In addition to supporting traditional analog broadcast video and functionality, digital HCTs ("DHCTs") now also support an increasing number of services that are not analog, but rather digital; are not broadcast, but rather two-way communication as for example video-on-demand; and are not video, such as e-mail or web browsers. The digital subscriber television system can be a two-way interactive system, allowing additional features such as allowing a

30   subscriber to pause a movie. These are all in addition to the host of other television services that are being made available to subscribers, examples of which include audio and audio/visual programming, advanced navigation controls, impulse pay-per-view technology, and online commerce to name but a few.

The subscriber television system now allows the subscriber to select and set multiple parameters and preferences to customize the services and displays available to the subscriber. A subscriber television system defines the parameters that it allows its subscribers to select. The subscriber television system sets the preferences to a standardized initial or default value prior to

5   issuing the HCTs to subscribers. Upon receiving a new HCT or upon having an HCT returned from a subscriber, a subscriber television system must reset the preferences to the default settings for that subscriber television system. In addition, it would be useful if there was a way to verify that the HCT will operate within the specific subscriber television system once it is activated.

Thus, there is a need for an efficient method and system that will allow the operator of a

10   subscriber television system to easily set default preferences on an HCT or on multiple HCTs and to determine if the HCT will function properly within the subscriber television system.

BRIEF DESCRIPTION OF THE DRAWINGS

15
FIG. 1 illustrates a method for staging an HCT to set the standardized default parameters and verify proper functioning.

FIG. 2 is an overview of a system for staging an HCT to set the standardized default parameters and verify proper functioning.

20   FIG. 3 illustrates a status summary screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 4 illustrates a power-on self test results and boot status screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 5 illustrates a versions and serial numbers screen that is displayed on a display that

25   forms a part of the system of FIG. 2.

FIG. 6 illustrates a screen for displaying various statuses and network parameters that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 7 illustrates an RF statistical information screen that is displayed on a display that forms a part of the system of FIG. 2.

30   FIG. 8 illustrates a PowerKEY information screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 9 illustrates an impulse pay-per-view screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 10 illustrates a QPSK statistical information log information screen that is displayed on

35   a display that forms a part of the system of FIG. 2.

FIG. 11 illustrates a pay-per-view service summary screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 12 illustrates a digital video status screen that is displayed on a display that forms a part of the system of FIG. 2.

5   FIG. 13 illustrates a resident application information screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 14 illustrates a Quadrature Amplitude Modulation (QAM) channel status screen that is displayed on a display that forms a part of the system of FIG. 2.

FIG. 15 illustrates a Quadrature Phase-Shift Keying (QPSK) channel status screen that is

10   displayed on a display that forms a part of the system of FIG. 2.

FIG. 16 illustrates various aspects of an exemplary subscriber television system in which the staged HCTs are designed to operate.

DETAILED DESCRIPTION

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The present invention is directed to an efficient method and system that allows the operator of a subscriber television system to easily set default preferences on an HCT or on multiple HCTs and to determine if the HCT will function properly within the subscriber television system.

The type of preferences that can be customized by subscribers includes the first channel

20   displayed on powering-up the HCT, parental control features, Video Cassette Recorder (VCR) timers, Internet interface parameters, audio parameters, channel blocking, passwords, program guide display parameters, and the like. Each subscriber can choose and set the parameters and options they prefer. The subscriber preferences are stored in a non-volatile memory on the HCT and may be communicated to the subscriber television system headend in a two-way interactive

25   system. This allows the subscriber preferences to be restored following a power outage. Each subscriber television system will establish default settings for the parameters that a subscriber can select in that subscriber television system. When a subscriber returns an HCT to the system operator or a new HCT is purchased by the subscriber television system operator, the preferences stored in the non-volatile memory need to be set to the default settings for that subscriber

30   television system. For example, the previous user's password should be erased and a default password needs to be set in order to allow a new subscriber to establish a password they prefer.

Subscriber television systems use keys, code words, authorization messages, session control, expiration timers, and other security methods to keep unauthorized users from accessing the available services. An HCT must be able to receive and decode the security information of

35   the subscriber television system to function properly. The HCT can be installed at a subscriber

location and then tested to verify that it can properly receive and decode the security information. The problem with this is if the HCT does not function properly the subscriber must return it and get another HCT. A preferred method would be to verify during a staging process that an HCT will function within a subscriber television system.

5   In an exemplary embodiment, the present invention provides an efficient method and system that allows the operator of a subscriber television system to easily set default preferences on one or more HCTs and to determine if the HCT will function properly within the subscriber television system. The staging system allows multiple HCTs to be tested for proper function within a subscriber television system and to be set to the default preferences of the subscriber

10   television system. Referring now to the drawings, in which like numerals represent like elements throughout the several figures, the present invention and a subscriber television will be described.

FIGS. 1 and 2 illustrate a method and system for staging one or more HCTs to set the standardized default parameters and verify proper functioning. FIG. 2 is an overview of a system for staging one or more HCTs to set the standardized default parameters and verify proper

15   functioning. Staging system 200 includes a system staging portion 202, a multitude of HCTs, and a remote control 220. The HCTs can include both new HCTs and HCTs that have been returned by subscribers. HCT 204 represents an HCT that has been returned from a subscriber television system subscriber and which has the preferences and options selected by that subscriber in the NVM associated with the user selections. Using staging method 100 (discussed below), a system

20   operator would use remote control 220 to reset the user selectable parameters to the values that correspond to the system defaults and verify that the HCT 204 will function properly within the subscriber television system. The front panel LED 210 displays information associated with the staging functions. HCT 206 represents a new HCT that has not yet been deployed in the television system. The parameters would usually be set to a factory default. Using staging

25   method 100, a system operator would use remote control 220 to set the user selectable parameters defined by the subscriber television system to the values of the system defaults and verify that the HCT 206 will function properly within the subscriber television system.

FIG. 1 illustrated method for staging one or more HCTs to set the standardized default parameters and verify proper functioning. For staging method 100, the HCT is connected to a staging portion of the subscriber television system (step 102). The staging portion of the subscriber television system is not limited by location or connectivity. The staging portion could

5   be located in a subscriber television system headend or at another location, such as a distribution warehouse. The staging portion could be connected directly to the active portion of the subscriber television system that provides services to subscribers, connected to an isolated portion of the subscriber television system, or independently associated with the subscriber television system. The independently associated system would include the functionality of the subscriber television

10   system and a mirror of the system settings to allow proper testing of the communication functionality.

One of the advantages of the present invention is that it allows a system operator to stage multiple HCTs at the same time without requiring the HCTs be connected to a network or a display. A single remote control unit can set the default parameters in the NVM on every HCT in

15   a rack. To change staging parameters and to verify system activity and communications the HCTs can be connected to a network. If there is a problem with an HCT, it can them be connected to a display and diagnostics mode activated.

The staging operator would initialize the staging process by pressing the pause key, for N seconds, on a remote control device aimed at the HCT(s) to be staged (step 103). The number of

20   seconds, N, can be varied based on the status of the HCT. An HCT flag can be set so that N= 1 when the HCT is being tested independently from the system and the default can be 10 seconds or a longer period as a barrier to prevent a subscriber from accidentally activating the staging mode. To enter the staging mode, the operator would then press the "Page –" key (step 104). Pressing any key other than the "Page –" (for Staging mode) or "Page +" (for Diagnostic mode)

25   keys aborts the activation. This is an additional barrier to the accidental activation of the staging mode by a subscriber. Those skilled in the art will appreciate that different initialization mechanisms can be used, such as other remote control keys, HCT front panel inputs, and system commands. Staging information would be displayed (step 105). For example, the system operator can select to display staging information such as the number of unique entitle management

30   messages (EMMs) received by the HCT, to display the HCT boot status, to display a session indicator, to display the number of interactive pay-per-view (IPPV) purchase messages received by the HCT, or to reset the non-volatile memory (NVM) associated with the user preferences in the HCT. The staging operator can then select which staging feature to display (step 106). One embodiment of the present invention includes displaying staging communication information on

35   the HCT's front panel light emitting diode (LED). The information could also be provided other

ways, such as outputting the information through a communications port on the HCT to a laptop or system controller. By pressing 1 on a remote control, the number of unique EMMs received by the HCT can be displayed on the front panel LED (step 108). By pressing 2 on a remote control, the HCT boot status can be displayed (step 112). The display includes information on the boot

5   status, such as displaying "SI" to indicate the HCT is searching for information tables to complete booting or "SAM" to indicate the service application manager (SAM) is waiting on other required boot operations before attempting to load tables. By pressing 3 on a remote control, a session indicator can be displayed (step 118). The session indicator indicates whether or not the HCT was able to establish a connection with the network. By pressing 4 on a remote

10   control, the number of IPPV purchase messages received by the HCT can be displayed (step 120).

The staging operator can also select to reset the NVM values associated with the subscriber selectable parameters to factory defaults or to system settings. In an embodiment of the present invention, resetting is restricted to HCTs that are in a non-authorized "Brick" mode, in which the

15   HCT is restricted from accessing all of the services of the subscriber television system. This is to prevent subscribers from resetting the NVM to circumvent features such as the parental control settings. By pressing the Settings key on a remote control, a count down window is displayed (step 124) on the front panel LED The count down window is responsive to the entry of a reset password (step 125). Upon entry of a valid reset password the NVM is reset to the default system

20   parameters and the staging mode is exited (step 126). The staging operator can exit the staging mode at anytime by pressing the exit key on the remote control (step 180).

Instead of entering the staging mode after initiating the staging process (step 103), the operator could press the "Page +" key to enter a diagnostic mode (step 160). The system operator might want to view diagnostics information for the HCT during the staging process for many

25   reasons, such as the HCT is not properly communicating and receiving unique EMMs. The diagnostic information can include a variety of information including memory status, QAM levels, software anomalies, and transport packet information. The diagnostics can be displayed on a television (TV) connected to the HCT or communicated to another device for display. The navigation within the diagnostic screens is done using the "Page –" and the Page +" keys on the

30   remote control. Pressing exit (step 180) exits the staging mode (step 190).

Figures 3-15 illustrate a variety of exemplary diagnostics screens. In an exemplary embodiment, pressing "Page +" after activating the staging process enters the diagnostic mode and displays a status summary screen (FIG. 3). The diagnostic mode displays thirteen screens of diagnostic and status information about the HCT. The "Page +" and "Page -" keys on a remote control can be used to display other screens. This information can be accessed by other methods, such as front panel keys or via an external command. FIG. 3 illustrates a status summary screen. FIG. 4 illustrates a power-on self test results and boot status screen. FIG. 5 illustrates a versions and serial numbers screen. FIG. 6 illustrates a screen for displaying various statuses and network parameters. FIG. 7 illustrates an RF statistical information screen. FIG. 8 illustrates a PowerKEY conditional access information screen. FIG. 9 illustrates an impulse pay-per-view screen. FIG. 10 illustrates a QPSK statistical information log information screen. FIG. 11 illustrates a pay-per-view service summary screen. FIG. 12 illustrates a digital video status screen. FIG. 13 illustrates a resident application information screen. The resident application screen includes software anomalies, such as unusual and failure conditions detected by the software. FIG. 14 illustrates a Quadrature Amplitude Modulation (QAM) channel status screen. FIG. 15 illustrates a Quadrature Phase-Shift Keying (QPSK) channel status screen.

Television System Overview

FIG. 16 illustrates various aspects of an exemplary subscriber television system in which the staged HCTs of present invention are designed to operate. The present invention relates to the staging of an HCT for eventual operation in a subscriber television system. Those skilled in the art will appreciate that although analog equipment is not described below, the present invention may be used in television systems that employ both digital and analog equipment.

The subscriber television system 1600 includes a headend 21, which receives input programming from multiple input sources. The system staging portion 202 could be co-located with the other equipment in the headend 21. The headend 21 combines the programming from the various sources and distributes the programming to subscriber locations (e.g., subscriber location 50) via distribution system 48.

In a typical system, the headend 21 receives programming from a variety of sources 2a, 2b, 2c. The programming signals may be transmitted from the source to the headend via a variety of transmission paths, including satellite 10, 12, and terrestrial broadcast 15, 16. The headend can also receive programming from a direct feed source 8 via a direct line 17. Other input sources

5   include a video camera 18 or a server 20. The signals provided by the programming sources can include a single program or a multiplex that includes several programs.

Programmers and subscriber television system operators both employ forms of conditional access, or encryption, to prevent piracy and ensure that their signals are only being received by those that have subscribed to and paid for their services. For example, programmers employ

10   conditional access to ensure that their transmissions are only decrypted by those subscriber television system operators that pay for their programming. Similarly, subscriber television system operators can use conditional access to prevent "pirates" from receiving premium channels or pay per view programming that they have not paid for. Thus, a signal from a programmer may be decoded using "incoming" conditional access, and then encoded for

15   transmission to the subscribers using "outgoing" conditional access. An example of a conditional access system that may be used in subscriber television system 1600 is disclosed in commonly assigned, co-pending U.S. patent application S/N 60/054,575 filed 1 August 1997, entitled Conditional Access System, the disclosure of which is incorporated herein by reference.

The headend 21 includes a plurality of receivers 22a, 22b, 22c, 22d that are each associated

20   with an input source. MPEG encoders such as encoder 30 are included for encoding such things as local programming or a video camera 18 feed. A switch 32 provides access to server 20, which could be a Pay-Per-View server, a data server, an internet router, a network system, or a phone system. Some of the signals may require additional processing, such as signal multiplexing prior to being modulated. Such multiplexing is done by multiplexer 34.

25   The headend 21 contains a plurality of modulators, 36a, 36b, 36c, and 36d, for interfacing to the distribution system 48. The modulators convert the received programming information into a modulated output signal suitable for transmission over the distribution system 48. The output signals from the modulators are combined, using equipment such as a combiner 46, for input into the distribution system 48.

30

A control system 44 allows the subscriber television system operator to control and monitor the functions and performance of the subscriber television system 1500. The control system 44 interfaces, monitors, and/or controls a variety of functions, including the channel lineup for the television system, billing for each subscriber, and conditional access for programming distributed to subscribers. Control system 44 provides input to the modulators for setting their operating parameters, such as system specific MPEG table packet organization or conditional access information. The control system 44 can be located at headend 21 or remotely.

The distribution system 48 distributes signals from the headend 21 to subscriber locations, such as subscriber location 50. The distribution system 48 could be an optical fiber network, a coaxial cable network, a hybrid fiber-coaxial network, a satellite system, or a direct broadcast system. There is a multitude of subscriber locations connected to distribution system 48. At subscriber location 50, a decoder 52, such as a home communications terminal (HCT) decodes the signals for display on a display device, such as on a television set (TV) 54 or a computer monitor. Those skilled in the art will appreciate that the signal can be decoded in a variety of equipment, including an HCT, a computer, a TV, a monitor, or satellite dish.

CONCLUSION

From the foregoing, it will be appreciated that the present invention provides an efficient method and system that allows the operator of a subscriber television system to easily set default preferences on an HCT or on multiple HCTs and to determine if the HCT will function properly within the subscriber television system.

The present invention has been described in relation to particular embodiments, which are intended in all respects to be illustrative rather than restrictive. For example, the exemplary method of activating the staging mode, using the "Pause" and "Page –" keys, could be accomplished using other keys, key combinations, special remote controls, special commands, and other activation methods. In addition, the exemplary diagnostics display screens could include a variety of additional parameters or could exclude some of the currently listed parameters.

Those skilled in the art will appreciate that although the present invention has been described in the context of verifying the communication of several parameters, the present invention is not so limited and the parameters to be checked and the process of accessing them can include a wide variety of possible parameters and ways to access them. Access could be done with a single key and with each press of the key a different parameter would be displayed. Additional parameters could include packet counters, transport stream identification, and others. The inclusion or exclusion of a parameter is a design choice of the present invention.

In addition, the subscriber television system has been described as a system with single set of default parameters for the system, but the present invention provides a flexible format staging platform for staging multiple default parameters with a simple flag to designate which set of default parameters is to be established on which HCT.

In conclusion, while exemplary embodiments of the invention have been illustrated and described, it will be clear that the invention is not so limited. Alternative embodiments will be apparent to those skilled in the art to which the present invention pertains without departing from its spirit or scope. Accordingly the appended claims rather than the foregoing description define the scope of the present invention.

What is claimed is:

CLAIMS

1. A method for staging at least one home communication terminal to reset to an initial

5   setting at least one parameter of a non-volatile memory containing system settings in the at least

one home communication terminal, the method comprising the steps of:

causing the at least one home communication terminal to enter a staging mode;

receiving from the staging portion of the system at least one reset input command at the

at least one home communication terminal, the at least one reset input command instructing the

10   at least one home communication terminal to reset to the initial setting for at least one parameter

of the non-volatile memory containing system settings; and

resetting the at least one parameter of the non-volatile memory containing system

settings to the initial setting.

15   2. The method of claim 1, wherein the step of causing the at least one home communication

terminal to enter a staging mode further includes the receiving of at least one enter staging input

command.

3. The method of claim 1, wherein any type of input command is received from a remote

20   control device.

4. The method of claim 1, wherein the resetting step can only occur if the at least one home

communication terminal is in a programming mode.

25   5. The method of claim 1, wherein the step of receiving at least one reset input command

further includes receiving input of a valid password and the resetting step can only occur if the

valid password is received.

6. The method of claim 1, wherein the step of resetting the at least one parameter is

30   responsive to a package authorization, the package authorization indicating if the at least one

parameter is to be reset.

7. The method of claim 6, wherein a file associated with the package authorization indicates

a value for the at least one parameter

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A method for causing a display of staging information for at least one home communication terminal, the method comprising the steps of:

    connecting the at least one home communication terminal to a staging portion of a system;

5   causing the at least one home communication terminal to enter a staging mode; and

    causing the display of the staging information for the at least one home communication terminal.

8.   The method of claim 7, further including the step of causing at least one system message to be transmitted to the at least one home communication terminal from the staging portion of the system; and wherein the staging information to be displayed is the number of system messages received.

9.   The method of claim 7, wherein the step of causing the at least one home communication terminal to enter a staging mode is responsive to receiving at least two enter staging input commands.

10. The method of claim 7, wherein the step of causing the at least one home communication terminal to enter a staging mode is responsive to continuously receiving an enter staging input command for at least 10 seconds.

11. The method of claim 7, wherein the at least one home communication terminal is responsive to a remote control device to enter the staging mode.

12. The method of claim 7, wherein the step of causing the display of the staging information causes the staging information to be displayed on the front panel light emitting diode display of the at least one home communication terminal.

13. The method of claim 7, further including the step of outputting the staging information from a communications port of the at least one home communication terminal.

14. The method of claim 7, wherein the staging information is selected from a group of staging information types including a count of entitlement management messages received by the at least one home communication terminal, a count of security key transmission messages received by the at least one home communication terminal, a boot-loader type message, a boot

5   status indicator, a count of impulse-pay-per-view purchase messages received by the at least one home communication terminal, and a session indicator.

15. The method of claim 14, wherein the at least one home communication terminal is responsive to a remote control device to control the staging information type to be displayed.

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16. The method of claim 7, further including the step of causing the display of diagnostic information for the at least one home communication terminal.

17. The method of claim 17, wherein the diagnostic information includes a listing of

15   software anomalies occurring on the at least one home communication terminal.

18. A method for staging at least one home communication terminal to establish an initial parameter setting and to cause a display of staging information, the method comprising the steps of:

       connecting the at least one home communication terminal to a staging portion of a

5   system;

       causing the at least one home communication terminal to enter a staging mode;

       causing the display of the staging information for the at least one home communication terminal, wherein the staging information is selected from a group of staging information types including a count of entitlement management messages received by the at least one home

10   communication terminal, a count of security key transmission messages received by the at least one home communication terminal, a boot-loader type message, a boot status indicator, a count of impulse-pay-per-view purchase messages received by the at least one home communication terminal, and a session indicator;

       receiving at least one input command at the at least one home communication terminal,

15   the at least one input command instructing the at least one home communication terminal to reset to the initial setting for at least one parameter of a non-volatile memory containing system settings; and

       resetting at least one parameter of a non-volatile memory containing system settings to the initial setting.

20.

19. The method of claim 18, wherein the at least one home communication terminal is responsive to a remote control device for causing the entry into the staging mode and for selecting the staging information type to be displayed.

25   20. The method of claim 18, further including the step of causing the display of diagnostic information for the at least one home communication terminal.

21. The method of claim 21, wherein the diagnostic information includes a listing of software anomalies occurring on the at least one home communication terminal.

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22. A system for staging at least one home communication terminal to establish an initial parameter setting and to verify reception of at least one system message, the system comprising:

        a staging portion of a system for transmitting at least one system message; and

        at least one home communication terminal for:

5   entering a staging mode;

                receiving at least one input command, the at least one input command instructing the at least one home communication terminal to reset to the initial setting for at least one parameter of a non-volatile memory containing system settings;

                resetting at least one parameter of a non-volatile memory containing system settings

10   to the initial setting;

                receiving at least one system message; and

                indicating the number of system messages received.

23. The system of claim 22, wherein the at least one system message is selected from a group

15   of message types including an entitlement management message, a key transmission message, a boot-loader type message, a impulse-pay-per-view purchase message, and a session count message.

24. The system of claim 22, wherein the indicating on the home communication terminal

20   indicates the type of system messages received.

25. The system of claim 22, wherein the home communication terminal further receives input directed to the type of system message to indicate and indicating on the home communication terminal the number of system messages received of the type directed.

25

26. The method of claim 22, wherein the at least one home communication terminal is further for displaying diagnostic information for the at least one home communication terminal.

27. The method of claim 27, wherein the diagnostic information includes a listing of

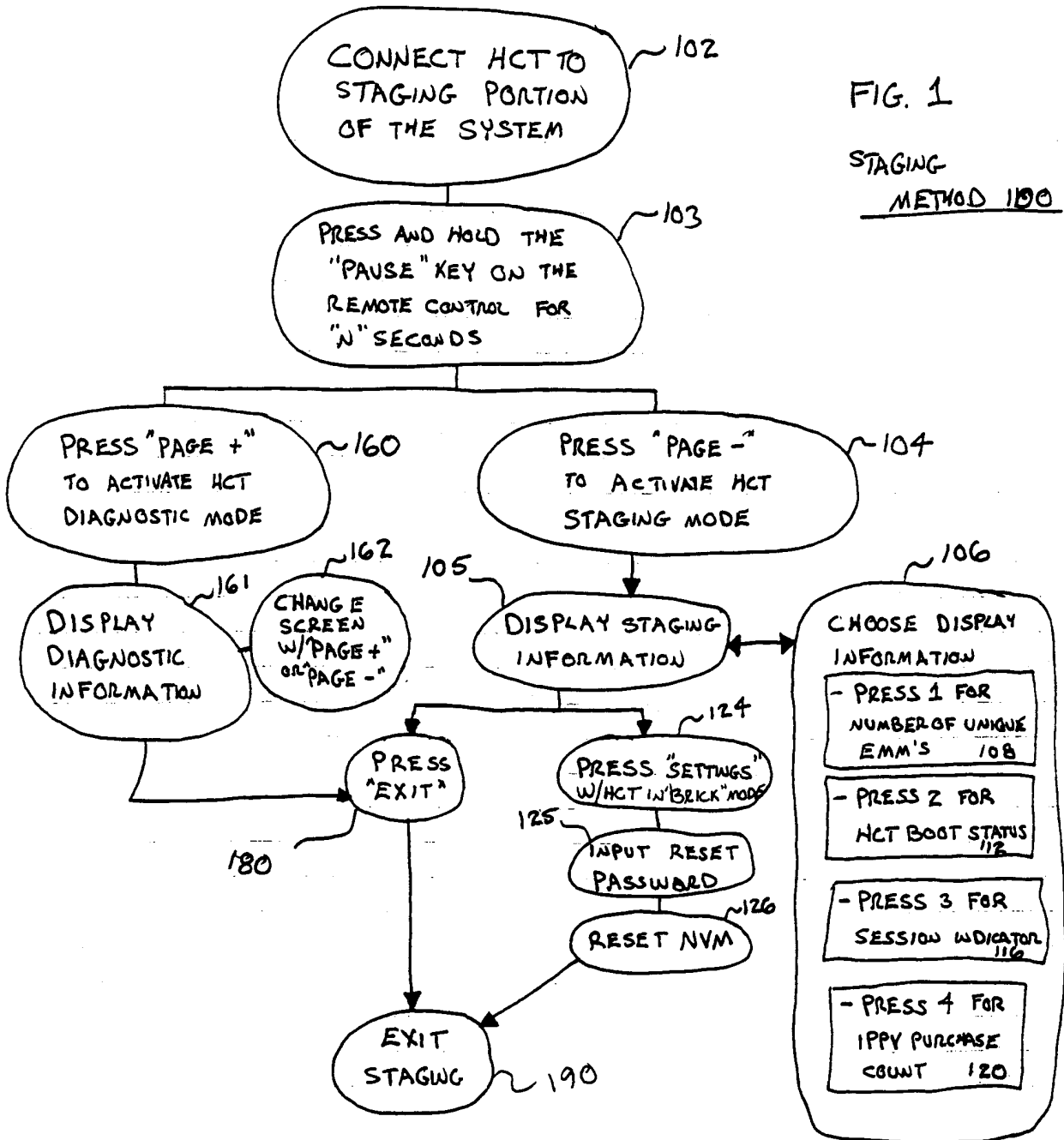30   software anomalies occurring on the at least one home communication terminal.

28. A system for staging at least one home communication terminal to establish an initial parameter setting, the system comprising:
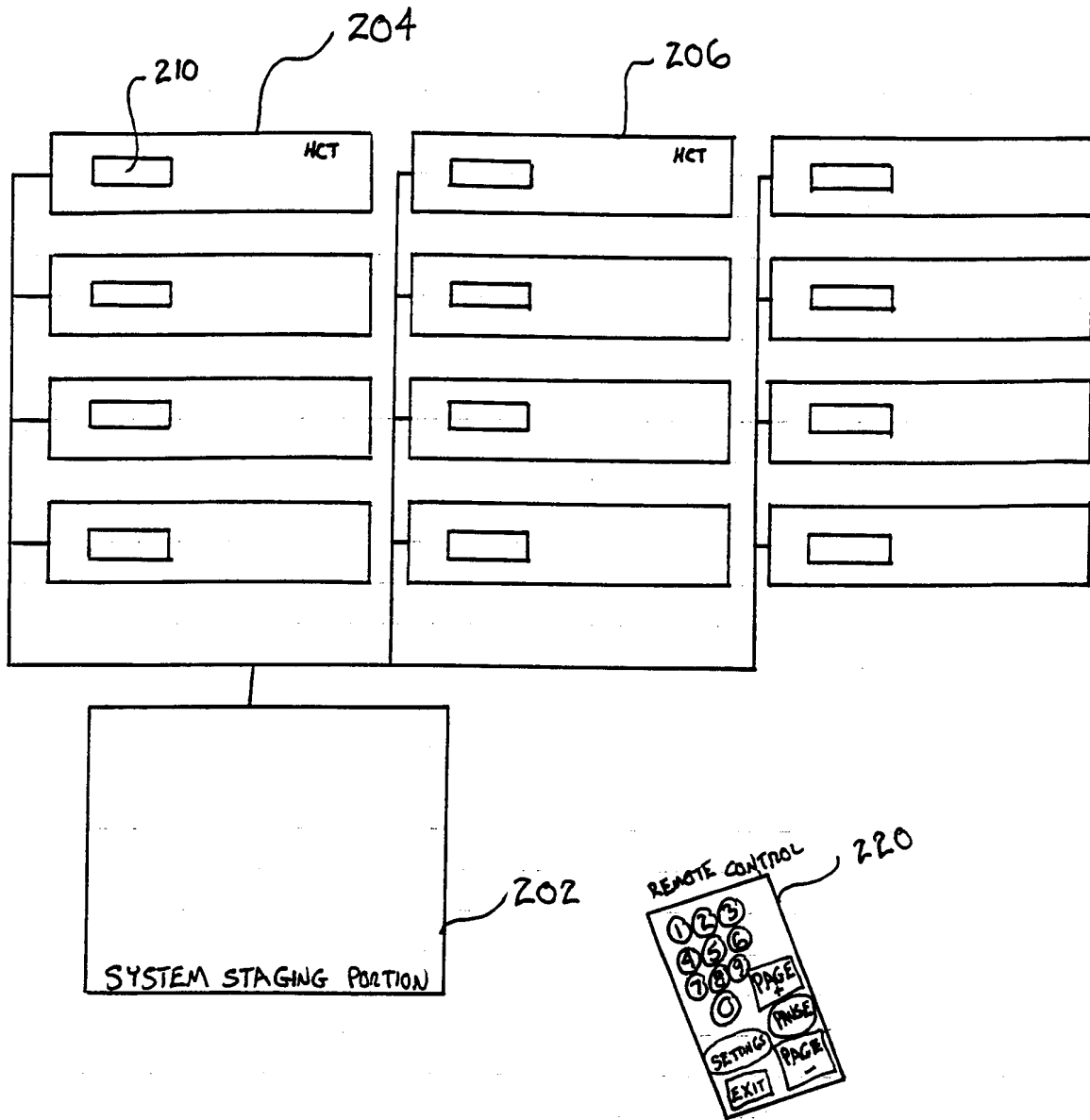
at least one home communication terminal for entering a staging mode responsive to receiving an enter staging command, for receiving at least one input command, the at least one

5   input command instructing the at least one home communication terminal to reset to the initial setting for at least one parameter of a non-volatile memory containing system settings, and for resetting at least one parameter of a non-volatile memory containing system settings to the initial setting; and

a remote control unit for transmitting the enter staging command and at least one input

10   command.

FIG. 1

STAGING
METHOD 100

CONNECT HCT TO
STAGING PORTION
OF THE SYSTEM ~102

PRESS AND HOLD THE
"PAUSE" KEY ON THE
REMOTE CONTROL FOR
"N" SECONDS ~103

PRESS "PAGE +"
TO ACTIVATE HCT
DIAGNOSTIC MODE ~160

PRESS "PAGE -"
TO ACTIVATE HCT
STAGING MODE ~104

DISPLAY
DIAGNOSTIC
INFORMATION ~161

CHANGE
SCREEN
W/"PAGE +"
OR "PAGE -" ~162

105

DISPLAY STAGING
INFORMATION ~106

CHOOSE DISPLAY
INFORMATION ~106

- PRESS 1 FOR
NUMBER OF UNIQUE
EMM'S   108

- PRESS 2 FOR
HCT BOOT STATUS
112

- PRESS 3 FOR
SESSION INDICATOR
116

- PRESS 4 FOR
IPPV PURCHASE
COUNT   120

PRESS
"EXIT" 180

PRESS "SETTINGS"
W/HCT IN "BRICK" MODE ~124

INPUT RESET
PASSWORD 125

RESET NVM ~126

EXIT
STAGING 190

STAGING SYSTEM   200

FIG. 2

FIG. 3

FIG. 4

FIG. 5

STATUSES
  Tuning Mode: QAM-256
  Tuner State: Found QAM
  TV Mgr: Active
  Tv Res Err: 0x00000000
  Tuning Tbl: 0824.1626
  Channel: 205=Subscription
  BFS Dir: 0908.154643

ETHERNET
  IP: 192.168.46.51
  Subnet Mask: 255.255.255.0
RF NETWORK
  IP: 10.1.64.61
  Subnet Mask: 255.255.192.0
  Hub ID: 1
  15:48:54, Ref:5 - Pg 4/13 - [Exit] or [Diamond]

MPEG STATS
  Video: 32
  Audio: 33
  PCR: 32
  PCR Lock: 1349391522
  A/V Disc: 0
  PTS: 1349409252
  PEI: 0
  PER: 0
  SER: 0
  RST: 0
ENTITLEMENT AGENTS
  ISE[1]: 0x00000001

FIG. 6

FIG. 7

PowerKEY INFORMATION

	Received	ISE	ESE
EMMs:	4	4	0
Time GBAMs:	31	31	0
App GBAMs:	0	0	0
Ext GBAMs:	0	0	0
ECMs:	4636	59	0

	Errors	Cmd/Err	Date.Time
ISE:	0	0x0/0x0	Never
Comm:	0	0x0	Never

Prog Stat: 0x26　　　　　Sub Expires: 0930.112800
Prog Entitle: 0x7　　　　　　CA Time: 0908.154900
Decrypt Stat: Okay　　　EUT Update: 0908.154641
Late Keys: 0　　　　　　Decrypt Fail: Never
　　　　　　　　　　　　Last Late Key: Never

15:49:55, Ref:3 ~ Pg 6/13 ~ [Exit] or [Diamond]

FIG. 8

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                    IPPV INFORMATION
            Received            ISE         ESE
Prch GBAMs: 1333               0           0
LAST ATTEMPTED
        Device: ISE                 Result: 0x0
           EID: 0x0                   Time: Never
LAST SUCCESS
           EID: 0x0                   Time: Never

    FPM Poll: Never
 PPV Collect: Never, EIDs=0



  15:50:14, Ref:5  -  Pg 7/13  -  [Exit] or [Diamond]
```
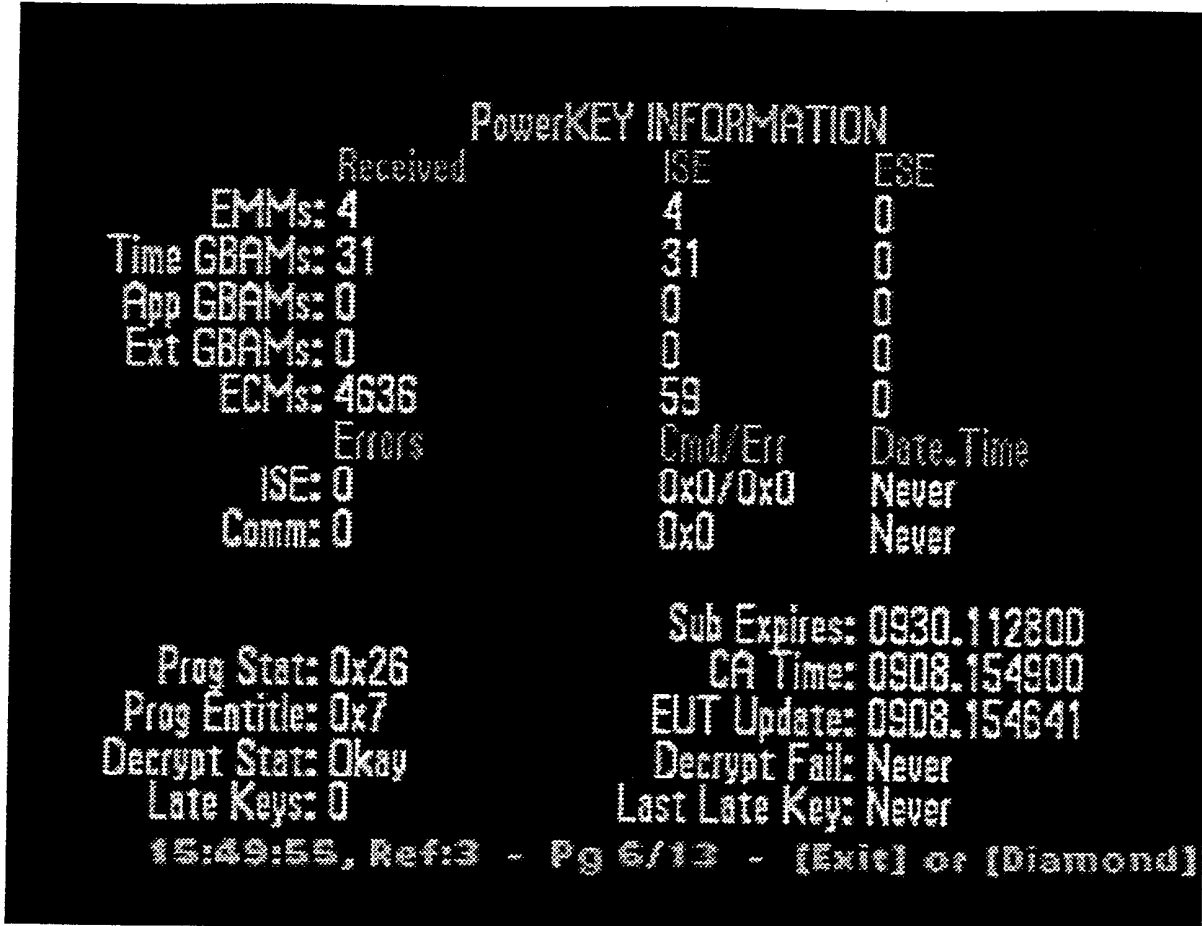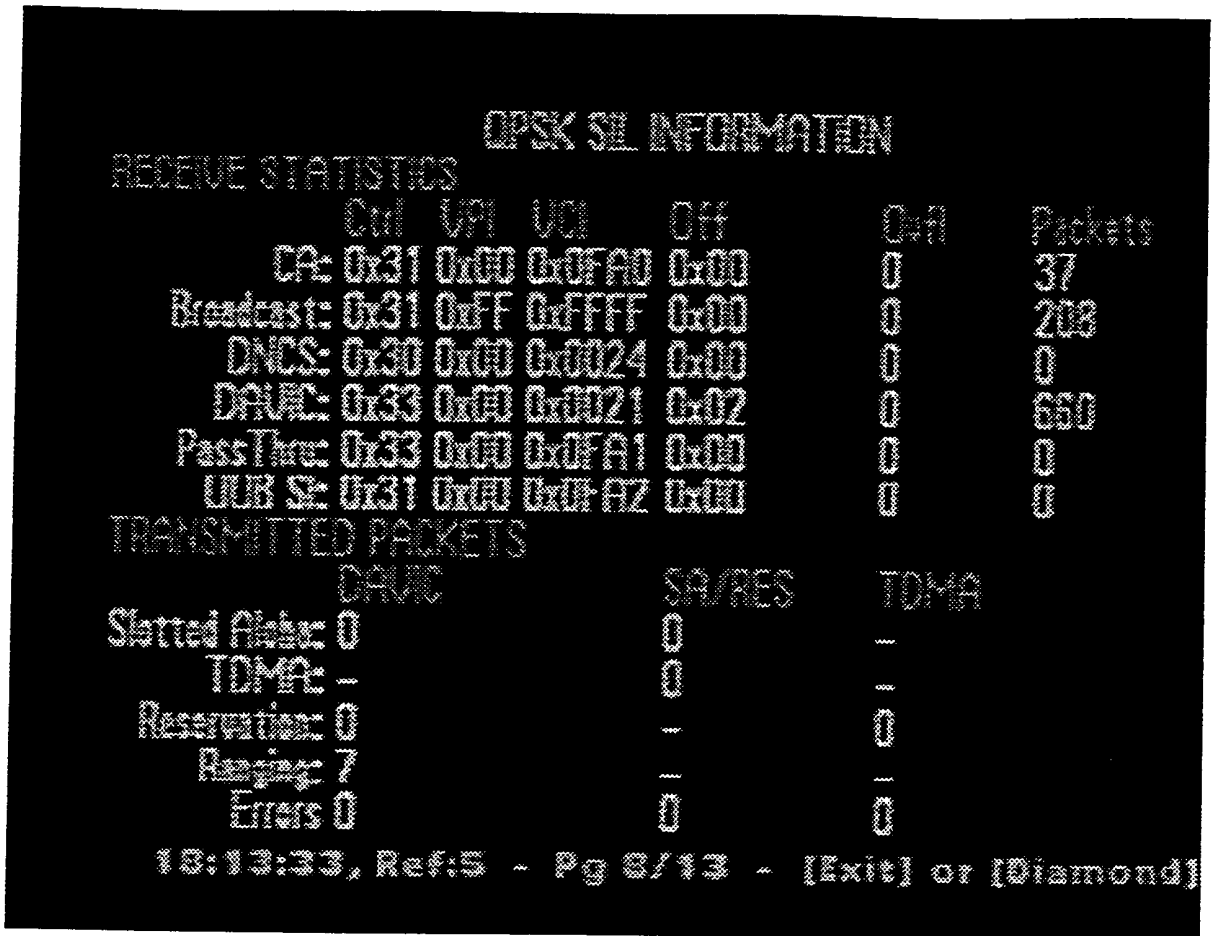
FIG. 9

FIG. 10

PPV SERVICE SUMMARY

PPV SERVICE
        State: Watching Event
    Svc Index: 0x03
      PPV Svc: PPV04   Event Svc: VC04
    Interstitial: n/a
PPV EVENT
        Title: As Good As It Gets
    Svc Index: 0x03
          EID: 0x00010004
    Secure Buy: Ready   GBAM: 1:10pm
        Event: 1:15-4:15pm
     Advertise: 1:00-4:15pm
      Preview: 1:15-4:15pm
   Cancel End: 4:15pm

   13:15:51, Ref:5 - Pg 9/13 - [Exit] or [Diamond]

FIG. 11

FIG. 12

SARA INFORMATION
Global Cfg: Tue Sep 7 1999, 11:54:56 AM EDT (0x37D53550)
Addressed Cfg: Fri Sep 23 2005, 4:14:16 PM EDT (0x10000)
IPG Daemon: Idle/Waiting c:00007F00: 0908.0013[initial load]
EAS: Total: 0; Last Load/Start: 0000.0000/0000.0000

15:52:57, Ref:5 - Pg 11/13 - [Exit] or [Diamond]

FIG. 13

FIG. 14

QPSK Channel Status

Chan	% Ful	Pkts RX	Pkts Acd	Overflows	Seconds
8	0	0	0	0	300
9	0	0	0	0	300
10	0	0	0	0	0
11	0	0	0	0	0
16	0	115	115	0	301
17	0	31524	295	0	301
18	0	1	1	0	232
19	0	915	915	0	307

16:54:23, Ref:5 - Pg 13/13 - [Exit] or [Diamond

FIG. 15
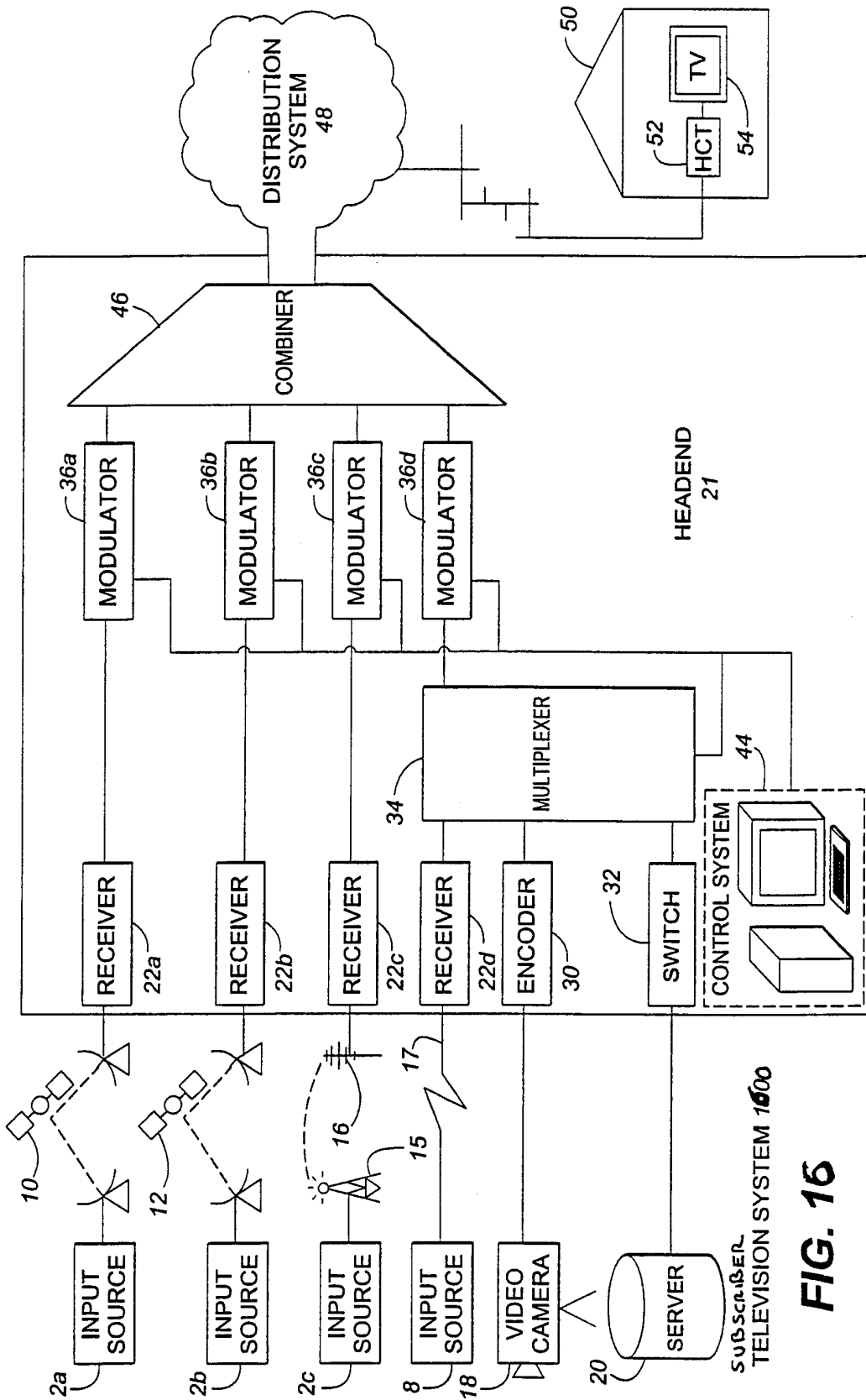
FIG. 16

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   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 7   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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 909 095 A (DISCOVERY COMMUNICAT INC) 14 April 1999 (1999-04-14) page 5, line 18 -page 9, line 13 page 18, line 19 -page 20, line 26 figures 1-12 ---	1-28
X	US 5 440 632 A (BACON KINNEY C ET AL) 8 August 1995 (1995-08-08) column 4, line 59 -column 16, line 42 figures 1-10 -----	1-6,18, 22,23,28

☐ 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

"E" earlier document 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 another 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	Date of mailing of the international search report
19 April 2001	25/04/2001

Name and mailing address of the ISA	Authorized officer
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	Van der Zaal, R

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

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