

## CHANNEL LABELLING APARATUS FOR A TELEVISION RECEIVER

This invention concerns television receivers having a 5 channel labelling function.

Background of the Invention

Many modern television receivers include a channel labelling feature in which a user is asked to enter a suitable label for each channel. This may be done by selecting individual letters 10 from a running display of letters, or by entering letters from an alphabetical keyboard on a remote control unit. Such a channel labelling feature is known from, for example, RCA CTC-140 chassis type television receivers manufactured by Thomson Consumer Electronics Incorporated, Indianapolis, Indiana, U.S.A.

15 Unfortunately, this process can take an inordinate amount of time and patience on the user's part given that modern cable television services may deliver as many as 125 channels.

Summary of the Invention

20 It is herein recognized that it is desirable that a television receiver provide preprogrammed labels for many widely available television networks. The user has only to select the proper channel and then select a corresponding preprogrammed label from a list in order to associate the channel 25 and label. In one embodiment the preprogrammed label is a graphically-formed logo or service mark of the television network.

Brief Description of the Drawing

30 FIGURE 1 is a block diagram of a portion of a television receiver suitable for implementing the invention.

FIGURES 2a - 2c are illustrations of screen displays produced in accordance with the invention.

FIGURES 3a and 3b are illustrations of channel labels 35 displayed on screen.

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| <input checked="" type="checkbox"/> | Description : paged ...1... to paged ...5...    |    |
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| <input checked="" type="checkbox"/> | Drawing(s) : paged ...7/8... to paged ...5/5... |    |
| <input checked="" type="checkbox"/> | Abstract : paged ...4... to paged ...-...       |    |
| DATE OF RECEIPT .....               |                                                 |    |

### Detailed Description of the Drawing

Referring to FIGURE 1, a television receiver includes an RF input terminal 100 which receives radio frequency (RF) signals and applies them to a tuner assembly 102. Tuner assembly 102 selects and amplifies a particular RF signal under control of a tuner controller 104 which provides a tuning voltage via a wire 103, and bandswitching signals via signal lines represented by the broad double-ended arrow 103', to tuner assembly 102.

Tuner assembly 102 converts the received RF signal to an intermediate frequency (IF) signal and provides an IF output signal to video (VIF) and sound (SIF) amplifier and detector unit 130. VIF/SIF amplifier and detector unit 130 amplifies the IF signal applied to its input terminal and detects the video and audio information contained therein. The detected video information is applied as one input of a video processor unit 155. The other input of video processor unit 155 is connected to an on-screen display and graphics processor circuit 140. The detected audio signal is applied to an audio processor 135 for processing and amplification before being applied to a speaker assembly 136.

Tuner controller 104 generates the tuning voltage and bandswitching signals in response to control signals applied from a system control microcomputer ( $\mu$ C) 110. The terms "microcomputer", controller, and "microprocessor", as used herein, are equivalent. Microcomputer 110 receives user-initiated commands from an infrared (IR) receiver 122 and from a "local" keyboard 120 mounted on the television receiver itself. IR receiver 122 receives IR transmissions from remote control transmitter 125. Microcomputer 110 includes a central processing unit (CPU) 112, a program memory (ROM) 114, and stores channel-related data in a random-access memory (RAM) 116. RAM 116 may be either internal to, or external to, microprocessor 110, and may be of either the volatile or non-volatile type. The term "RAM" is also intended to include

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electrically-erasable programmable read only memory (EEPROM) 117. One skilled in the art will recognize that if volatile memory is utilized, that it may be desirable to use a suitable form of standby power to preserve its contents when the receiver is turned off.

Microcomputer 110 operates from a source of standby power 145, and controls a source of operating power 150 via a control line 151 for selectively applying power to the remainder of the television receiver. Microcomputer 110 also includes a timer 118. Microcomputer (or controller) 110 generates a control signal for causing tuner control unit 104 to control tuner 102 to select a particular RF signal, in response to user-entered control signals from local keyboard 120 or from infrared (IR) receiver 122.

Tuner 102 produces a signal at an intermediate frequency (IF) and applies it to a processing unit 130 comprising a video IF (VIF) amplifying stage; an AFT circuit, a video detector, and a sound IF (SIF) amplifying stage. Processing unit 130 produces a first baseband composite video signal (TV), and a sound carrier signal. The sound carrier signal is applied to an audio signal processor unit 135 which includes an audio detector and may include a stereo decoder. Audio signal processor unit 135 produces a first baseband audio signal and applies it to a speaker unit 136. Second baseband composite video signals and second baseband audio signals may be respectively applied to VIDEO IN and AUDIO IN terminals from an external source.

The first and second baseband video signals (TV) are coupled to a video processor unit 155 (having a selection circuit not shown) Under control of controller 110, an on-screen display (OSD) processor 140 generates character signals and graphics signals, and applies them to a second input of video signal processor 155, for inclusion in the processed video signal.

Electrically-erasable programmable read only memory (EEPROM) 117 is coupled to controller 110, and serves as a non-volatile



storage element for storing autoprogramming channel data, and user-entered channel data.

The processed video signal at the output of video  
5 signal processor unit 155, is applied to a Kine Driver Amplifier  
156 for amplification and then applied to the guns of a color  
picture tube assembly 158 for display. The processed video signal  
at the output of video signal processor unit 155, is also applied to  
a Sync Separator unit 160 for separation of horizontal and vertical  
10 drive signals which are in turn applied to a deflection unit 170.  
The output signals from deflection unit 170 are applied to  
deflection coils of picture tube assembly 158 for controlling the  
deflection of its electron beam. The television receiver described  
thus far with the exception of OSD and GRAPHICS PROCESSOR 140  
15 is known, for example, from the RCA CTC-140 chassis color  
television manufactured by Thomson Consumer Electronics, Inc.,  
Indianapolis, Indiana, U.S.A.

The invention will now be described with reference to  
the remainder of FIGURE 1, the menu displays of FIGURES 2a - 2c,  
20 and the screen displays of FIGURES 3a and 3b.

FIGURE 2a shows a menu screen called up by a user  
wanting to enter a label for channel 11. To modify the label, the  
user highlights the LABEL line by using the + and - keys of remote  
control unit 125 to move up and down through the menu and by  
25 selecting the label line by pressing its SELECT key. Then user  
then presses the + and - keys to step through a preprogrammed  
list of labels. FIGURE 2b shows the preprogrammed label NBC. If  
the user desires to enter the preprogrammed label NBC, he simply  
presses the SELECT key of remote control unit 125. If, on the  
30 other hand, the user cannot find an appropriate preprogrammed  
label, then he steps through the list until he finds the label YOU  
ENTER. Upon selecting the YOU ENTER label, the user may enter  
his own label by pressing the +, -, and SELECT keys of remote  
control unit 125 until he has spelled the desired label. To further  
35 illustrate this point, FIGURE 2c shows a user-entered label



USER'S LABEL, and FIGURE 3b shows the user-entered label displayed on the screen 310b of a television receiver 310a.

OSD and GRAPHICS PROCESSOR unit 140 of FIGURE 1, 5 includes the capability of producing high resolution graphics for display on the screen of picture tube assembly 158, under control of controller 110. Controller 110 communicates with OSD and GRAPHICS PROCESSOR unit 140 via a digital control bus 131. One of the capabilities of OSD and GRAPHICS PROCESSOR unit 140 is 10 the ability to generate graphics logos or service marks of various sizes on the screen. FIGURE 3a shows a television receiver 300a, having a screen 310a showing a video image with the log for the NBC television network displayed in the upper right corner. This logo is stored in ROM and generated by OSD and GRAPHICS 15 PROCESSOR unit 140. The procedure for associating a graphics logo with a television channel is the same as that given above for selecting a text label. That is, the user steps through a list of preprogrammed text labels until he finds the proper one, for example NBC. Upon selecting NBC, controller 110 causes OSD and 20 GRAPHICS PROCESSOR unit 140 to substitute a preprogrammed graphics logo, if one exists in memory, for the corresponding text label.

A constructed and tested version of the invention includes 108 preformed labels and memory space for 19 user- 25 entered labels.



## CLAIMS:

1. A television receiver, comprising:  
means (120,125) for entering data in response to  
5 operation by a user;  
memory means (116,117) for storing data  
corresponding to preformed labels;  
control means (110) coupled to said memory means  
(116,117) for reading said data from said memory means  
10 (116,117); and  
on-screen display and graphics generator means (140)  
coupled to said control means (110) for producing text character  
and graphic signals for display, said text character and graphics  
signals corresponding to said stored data;  
15 wherein  
said control means (110), associates said stored data  
labels with ones of television channels in response to data input  
by a user.
- 20 2. The apparatus of Claim 1 wherein said preformed  
label is a network logo or service mark..
3. The apparatus of claim 1 wherein said preformed  
label comprises text characters.
- 25 4. The apparatus of Claim 1 wherein data relating to a  
label is entered by a user.

