ITC222 Advanced Convergence

Attention: Accessing the service manual and changing the settings saved in the EEPROM may compromise the operation of the set. I personally feel that performing advanced convergence is low-risk operation, but I will not guarantee your success. Before changing any video or geometry settings, write down the original settings. All original settings are lost when the new settings are stored. All operations I describe should be considered to be **"at your own risk"**. Instructions on accessing the service menu and performing advanced convergence can be found in the service manual alignment chapter for the ATC222 downloadable from http://home.austin.rr.com/doctorjoe.

1) Download and read the alignment chapter of the service manual from my home page (link above).
2) There are two "native" scan rates for convergence, 480 and 1080. Advanced convergence must be performed independently for both scan rates,
3) The service manual does not state clearly that there is any difference between video source or video input for the advanced convergence procedure for either scan rate. I used a DVD via component video for 480 mode and 1080i via DVI for 1080 mode.
4) Tune the video signal for the scan rate you are converging. Let the set warm up for 20 minutes.
5) Turn off the set and boot into the service menu. Wait 10 seconds, then hold down the Channel Down and Volume Down buttons on the front of the TV. Hold for 8 seconds. The set will boot into the service menu (figure 1)
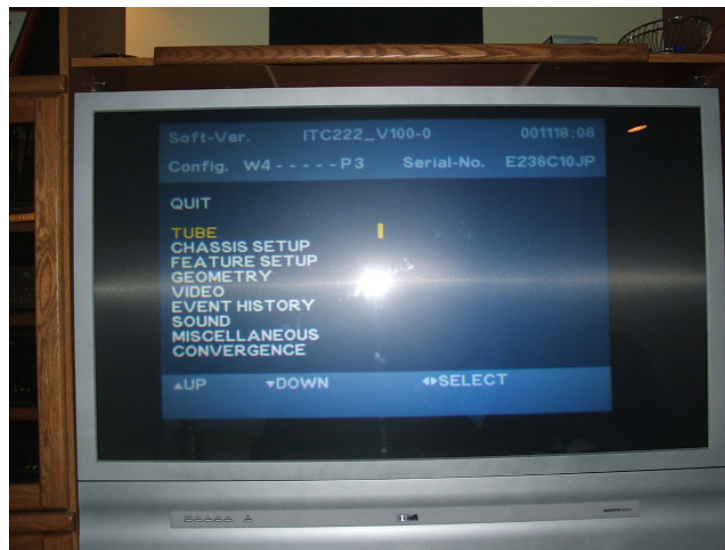

Figure 1: Service menu initial directory.

6) Use the remote control (make sure the remote is in "TV" mode; but don't change the input you tuned!) arrow keys to select "convergence" and press the OK button.

Joseph Shovlin
dr_joe_@hotmail.com   1/16/06

7) You should now see the main convergence menu (Figure 2). Note that the scan rate the set is in is indicated in the upper right hand corner of the menu (in figure 2, it says "1080").
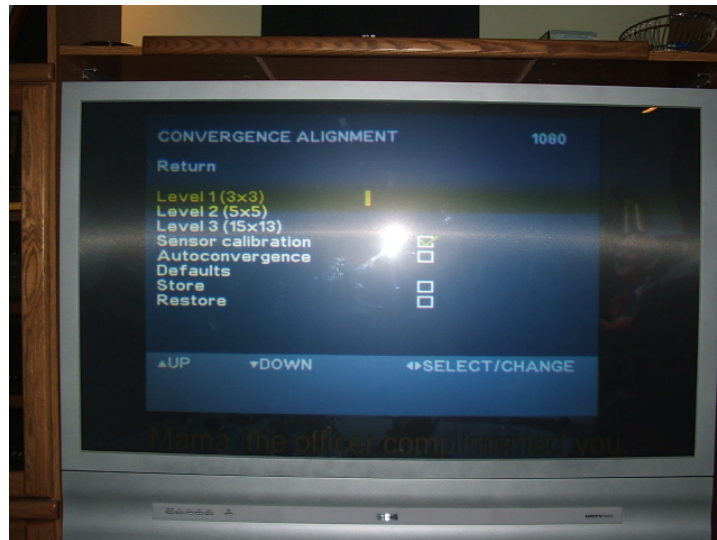

Figure 2: Main convergence menu.

8) Use the arrows on the remote and select "Level 1 (3x3)". Press the OK button.
9) An instruction screen loads (Figure 3). Read the instructions: Press 'OK' to move from alignment screen to screen. Press 2 to move from point to point. Use the arrow keys to adjust. Press 'clear' to exit the convergence grids back to this menu.
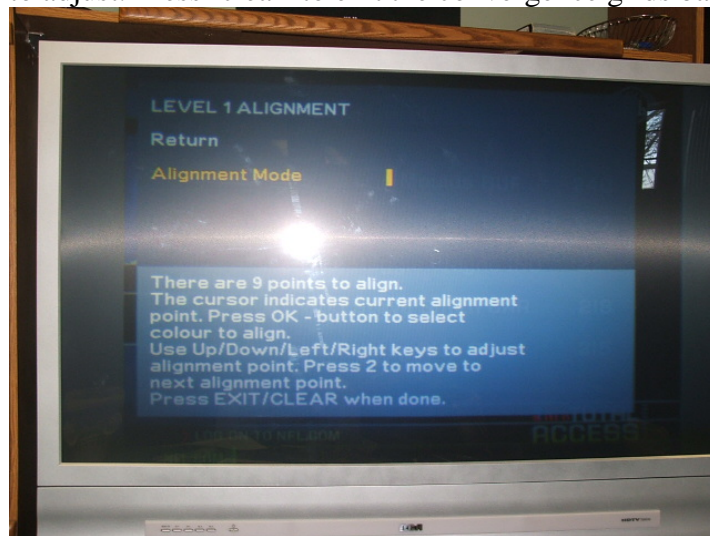

Figure 3: Level 1 Alignment instructions menu

10) Press 'OK'. This brings up the red/green grid. Adjust each of the points so that the red line is hidden behind the green: red + green = yellow. The adjustment point is a plus sign – adjust both horizontal and vertical lines in the '+' so you see no red (Figure 4). Use the '2' button to move from point to point – it may take several passes over each point to remove all the red.

Joseph Shovlin
dr_joe_@hotmail.com   1/16/06
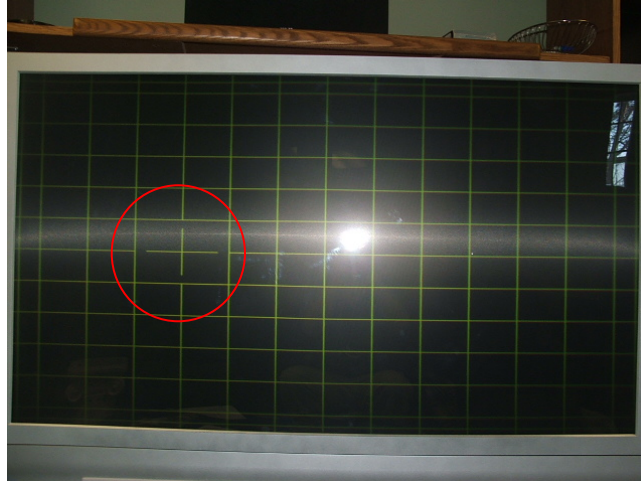
Figure 4: 5x5 Convergence Grid Screen. Adjustment point is circled. Use the remote arrow keys to make any red disappear from the horizontal line of the plus sign (up and down arrows) and the vertical line of the plus sign (left and right arrows). Then move on to the next adjustment point.

11) Press 'OK'. This brings up the blue/green grid. Adjust each point so that the blue line is hidden behind the green: blue + green = cyan. The adjustment point is a plus sign – adjust both horizontal and vertical so you see no blue. Use the '2' button to move from point to point – it may take several passes over each point to remove all the blue.

Note: http://www.rgbworld.com/color.html#add has a description of the additive nature of RPTV color

12) Press the "clear" button on the remote. This brings you back to the instructions screen.
13) Use the arrows on the remote to highlight "return" and press 'OK' on the remote – this brings you back to the main convergence menu.
14) Use the arrows to highlight "Level 2 (5x5)". Press 'OK' to bring up the instructions screen and follow steps 9-13 again.
15) Use the arrows to highlight "Level 3 (15x13)". Press 'OK' to bring up the instructions menu. Read the instructions: Press 'OK' to move from alignment screen to screen. Press 2, 4, 6, and 8 to navigate from point to point on the grid. Use the arrow keys to adjust. Press 'clear' to exit the convergence grids back to this menu.
16) Press 'OK'. This brings up the red/green convergence grid. Move from point to point and adjust the red grid behind the grid. Pay close attention to the edges of the screen. The outermost adjustment points are actually beyond the edge of the screen. It may take many passes through the grid to get it right. I find it easiest to concentrate on one area of the screen at a time.
17) Press 'OK'. This brings up the blue/green convergence grid. Repeat step 16 for blue.
18) Pressing 'OK' again brings up a green convergence grid. This grid is preset to be "square". It is not recommended to adjust this grid unless you purchase a mylar

Joseph Shovlin
dr_joe_@hotmail.com

convergence template from Thomson available at
http://www.thomsonnetwork.com (you can also purchase a full copy of the
service manual here).

19) Pressing 'OK' again brings up a white convergence grid. For this grid, the red and
blue grids are fixed and you adjust the green grid. ***The service manual and other
Thomson training documents that I know of do not explain under what
circumstances this screen should be adjusted.***

20) Press 'clear' to go back to the instructions screen. Use the remote to select
'return' to get back to the main convergence menu.
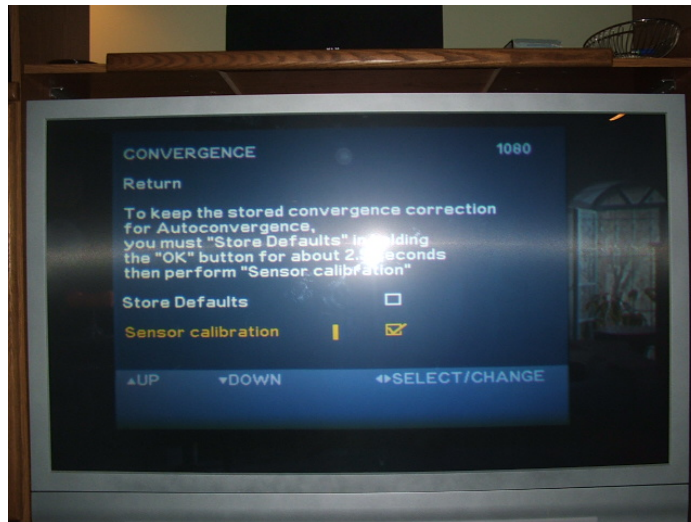
21) Select "store" in the main menu and press 'OK'.

Figure 5: Convergence save menu

22) In the Convergence Save Menu (Figure 5), highlight "store defaults" and hold
down the 'OK' button on the remote for 2.5 seconds. A checkmark will appear in
the box.

23) Highlight "sensor calibration". The TV will calibrate the sensors and save the
convergence. At the end of the process, the screen will blink green.

24) Select "return" until you get to the main service menu screen; press "clear" or
select "quit" to leave the service menu.

25) Repeat for the second scan rate.

I found that the initial advanced convergence takes the longest. It will take many
hours if you skip the 3x3 and 5x5 adjustments and jump straight to the 15x13
adjustment. You may have the best luck by working on the same scan rate a few days
in a row. Once the convergence is good, touch-ups can be done going directly to the
15x13 grid and take only a few minutes. Complete 3x3, 5x5, and 15x13 convergence
will only be necessary if there are major changes to the set (i.e. CRT replacement, set
is moved to a new location, the CRT's are focused).

Joseph Shovlin
dr_joe_@hotmail.com   1/16/06