



Technical Note

The 2rn test card is transmitted by the network operator in order to facilitate the evaluation of television receiver display and audio settings.

When using the transmitted 2rn pattern to evaluate a television receiver it is important to ensure that:

- i) The television receiver has been installed and adjusted according to the instructions of the receiver manufacturer and
- ii) That the viewing conditions are dependent upon the complete receiving installation and not just the receiver. It is essential therefore that the antenna type, polarisation and direction must be compatible with the locally available Saorview signal.

General

Aspect ratio: The aspect ratio of the test pattern is 16:9, a border castellation is provided for alignment and centering checks, on the correctly adjusted receiver the border castellation should just be visible on the receiver display.

Crosshatch and Circle: A square crosshatch and circle are provided to enable linearity and geometry checking of the display, the human eye is particularly sensitive to errors in circle geometry.

Circle

Low frequency response: The black rectangle surrounded by white at the top of the circle is used to check the low frequency response of the receiver. Poor LF response will be indicated by streaking in the white area to the right of the black rectangle.

Needle pulse: A transition needle pulse of 225ns is provided to check delays in video processing. Images to the right of the pulse indicate the presence of errors.

250 kHz Square wave: The 250 kHz square wave is at 75% luminance amplitude and provides a black and white reference for the test pattern colour bar, this luminance level is at the same amplitude level of the Red, Green and Blue sections of the colour bar, the square wave may also be used to check receiver transient response.

Colour Bars: European Broadcasting Union (EBU) colour bars are used within the circle, these are yellow, cyan, green, magenta, red and blue vertical bars at 100% saturation and 75% amplitude. Receiver chrominance saturation should be adjusted from zero (black & white) to a point where a bleed of colour from the red bar into the blue bar is just observed, chroma saturation should then be backed off slightly from this point.

Horizontal Centre Line: This test consists of two lines, one in each field, errors in scan interlace will be highlighted by a difference in the width or by the appearance of a line pair within the area of the centre line. A white cross on black is placed directly in the centre of the test pattern.

PLUGE: The lower black rectangle of the centre cross is at 5% below black level (PLUGE* signal) and is included to allow precision setting of the receiver brightness level, with the receiver correctly adjusted the transition of black level between the centre black bar and the lower rectangle should just be visible.

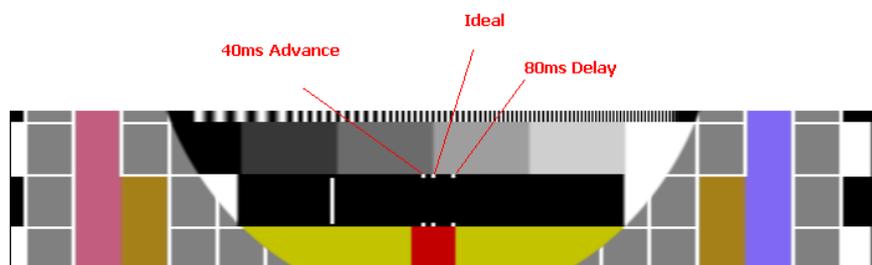
PLUGE Picture Line-Up Generation Equipment. A "pluge pattern" is a test pattern used to calibrate the black level on a video display. Black level basically refers to the brightness of the darkest areas in the picture.*

Definition lines: The definition lines are sinusoidal and divided into five different blocks representing five different video frequencies: 0.8 MHz, 1.8 MHz, 2.8 MHz, 3.8 MHz and 4.8 MHz respectively, with the sharpness level of the receiver correctly adjusted the 4.8 MHz block should be clearly visible.

Grey Scale: The grey scale is made up 6 steps from black to white, each step represents a 20% increase in luminance level: 0%, 20%, 40%, 60%, 80% and 100%

Moving Element: The test card includes a moving element within the lower black rectangle, this element is included to provide two functions.

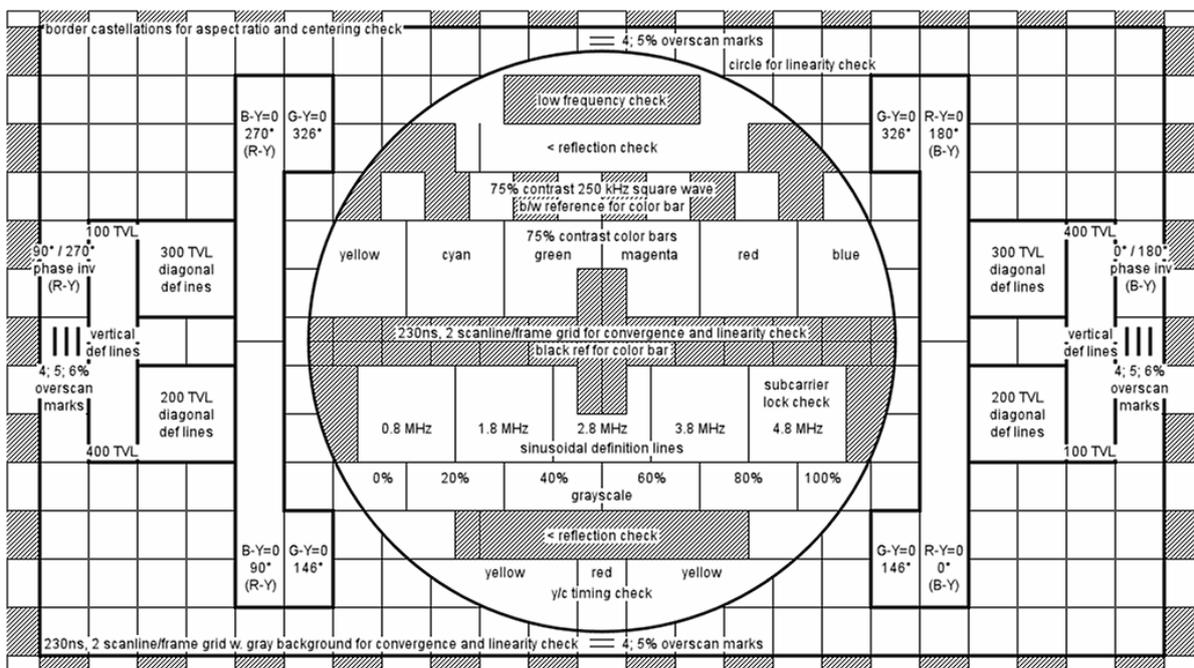
- i) The moving bar indicates that the transmission is live (not frozen) the movement of the bar should be linear and without interruption, any staggered movement to the sweep of the bar would tend to indicate poor signal receive quality.
- ii) Any delay or difference between the presentation of Audio and Video signals to the viewer (lip-sync test) will be apparent by the progress of the moving bar as it moves against the series of three stationary markers located within the black rectangle. As standard, a 1 kHz tone signal is broadcast along with the test pattern, (on the Saorview platform this 1 kHz tone is transmitted as an alternate language track, selectable via the language button of the Saorview approved receiver remote control). A break or click in this 1kHz tone will be noted as the moving bar passes the marker dots, the correct point in time for this click to occur is when the moving element is directly aligned with the centre dot of the three marker dots.



The left marker dot indicates one television frame or 40ms of audio advance (audio arriving before video), the right marker indicates 2 television frames or 80ms of delay (audio arriving after video), this latter scenario is more objectionable and noticeable to the viewer.

Chrominance luminance delay: The delay between chrominance and luminance is indicated by the red rectangle on yellow at the bottom of the circle. Any error in in timing between these two signals will be exhibited by a shift in position of the red rectangle. With the correctly operating receiver the edges of the red rectangle should be directly aligned with the vertical lines of the background crosshatch grid below.

Signals outside the circle: Line alternating R-Y and B-Y panels to indicate errors in chroma matrixing located on either side of the central circle, vertical definition line panels running from 100 to 400 Television Lines (TVL), diagonal definition line blocks of 200 and 300 TVL to the left and right of the raster, over-scan measurement markers are also provided to indicate the extent of raster misalignment.



2rn Test Card Description