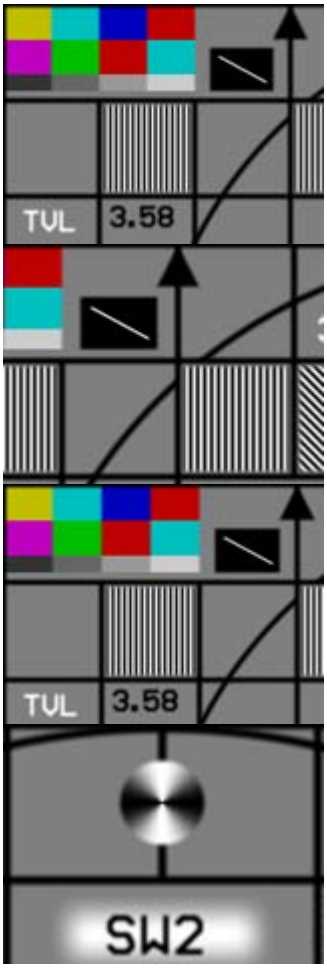
The Snell & Wilcox Test Chart #2

What is it?
The Snell & Wilcox #2 is a general purpose TV test chart and is a standard feature in a Snell & Wilcox TPG20 or TPG21Test Pattern Generators. It can be used for testing signal processors, mixers, decoders, encoders, standard converters and display devices. This page attempts to describe the functions of the different areas of the chart.
In a Snell & Wilcox TPG20 or TPG21, the composite waveform is generated using 10-bit quantization giving 588 levels from black to white.

If not otherwise specified, all lines, bursts and other chart components mentioned in this document are 100% contrast (covering full range from black to white).
The rectangular black grid is superimposed over the grey background. The purpose of this grid is mainly for a fast visual check of the display device geometry. Three primary colour rasters for registration checks. Vertical and horizontal lines of the grid have sine squared waveform shape with equal width; along the TV line they form 2T pulses (250 ns Half Amplitude Duration). Geometry also can be evaluated using the black circle with the diameter equal to the picture height. Circumference line width is 168 ns.

In some other formats the Snell & Wilcox Test Chart # 2 looks very similar, but some values could differ. For instance in PAL format the 2T value is not 250 but 200 ns and black level set-up is removed etc.

Detailed Description
Boundaries
Top and bottom boundaries of the active part are designated by four black triangular markers.

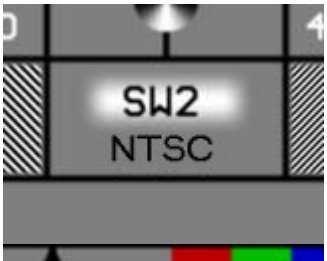


Interlace Check
This black box contains a narrow (horizontal cross-section 168 ns) oblique white line. The purpose of this test is to show the effect of lack of proper interlacing. It appears as a staircase instead of a smooth line when interlacing is incorrect.

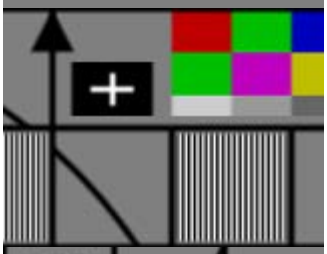
Tartan Bars
These are 75% tartan colour bars. The purpose of this test pattern is to measure the chroma sharpness both horizontally and vertically. It shows comb type Y/C separator failure on sharp vertical transients. Below the tartan bars is a grey scale with 20 %, 40 %, 60 % and 80 % levels useful for non-linearity tests.

Circular Grey Scale
The grey scale circular pattern (grey cone) is useful for visual assessment of quantisation distortion, dither etc

Chart Format
This tells the viewer the chart format, e.g. 'PAL'.

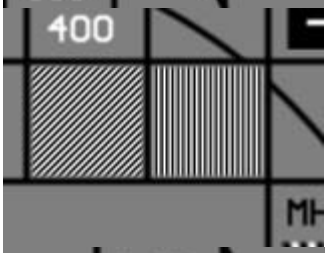


Registration Check
This area contains a black box with a white cross (200 ns). It can be used for raster registration check, 2D aperture correction symmetry measurement etc.

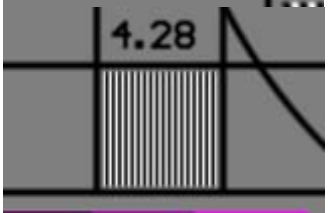


Frequency/Vertical Response Check
This section contains slightly oblique bursts (almost horizontal) with frequencies 100, 200 and 300 tvl. They are useful for testing scan converters and vertical enhancers.

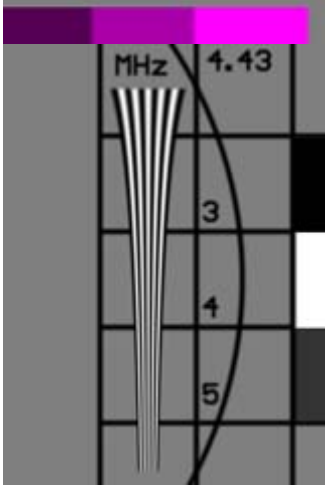
Horizontal and Diagonal Frequency Response Check
Bursts with frequencies correspondingly to 3.58 MHz verticals (NTSC SC), 300 tvl verticals, 300 tvl diagonals, 400 tvl diagonals, 400 tvl verticals, 4.43 MHz verticals (PAL SC). They are useful for quick check of frequency response, testing 2D aperture correction devices and evaluation of cross-colour effects with conventional and comb type decoders.



SECAM Bell Filter Check
This area contains a 4.286 MHz burst (SECAM bell filter centre frequency).



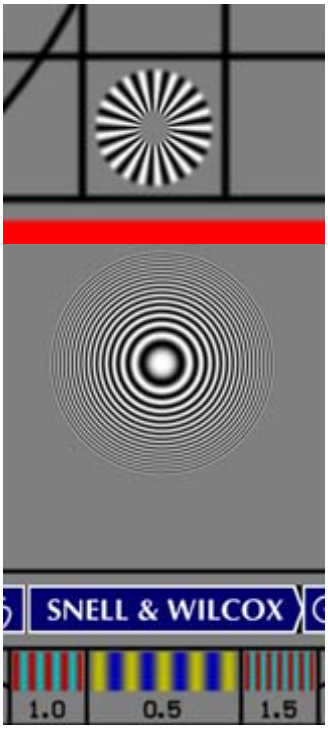
Frequency Response Wedge
This wedge covers the band from 1.5 MHz to 5.5 MHz



Radial Wedge
This radial wedge covers spatial frequencies up to 450 tvl. It shows decoding cross-effects and horizontal/vertical enhancement proportion.

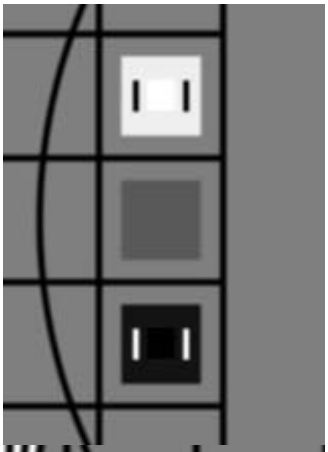
Moving Zone Plate
This area is occupied by a static or moving circular grating (Fresnel zone plate) covering spatial frequencies range up to 429 tvl (5.5 MHz).The radius of this grating is 0.15 of picture height.The moving zone plate is especially useful for checking line or frame based comb decoders and scan converters performance.

Chroma Frequency Response

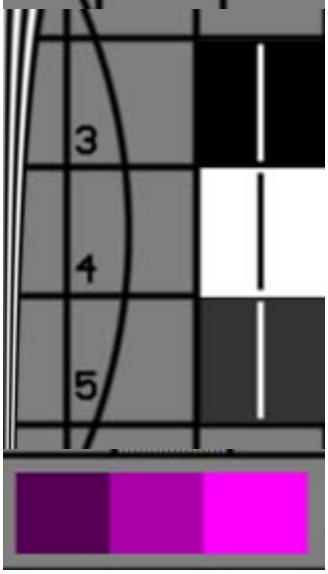


Y/C Timing Checks
This area contains blue/yellow and green/magenta bursts with frequencies 1.0, 0.5 and 1.5 MHz. They are useful for chroma resolution and Y/C timing tests.

PLUGE (Picture Line Up Generator)
The three boxes comprising the PLUGE (a BBC acronym for Picture LineUp Generating Equipment) are as follows:
- a small 93.75% white box on a 100% white background.
- a grey level (35%) box.
- a small dark grey (7.5%) box on a black background.



Pulse and Bar Tests
Three types of 2T (200ns) pulses are provided: white on black, black on white and white on dark grey (20%). This last pulse is useful for ringing and echo measurements if equipment under test includes black clipper concealing distortions below black level.



Chroma Non-Linearity Tests
This area contains a 3 level chroma staircase in the form of 33.3%, 66.6% and 100% magenta boxes. It can be used for chroma nonlinearity and differential phase measurements.

Large Area Chroma Tests
A 100% red box is provided for visual assessment of chroma noise, large area chroma flicker, and Hanover bars type distortions.