PM 5544

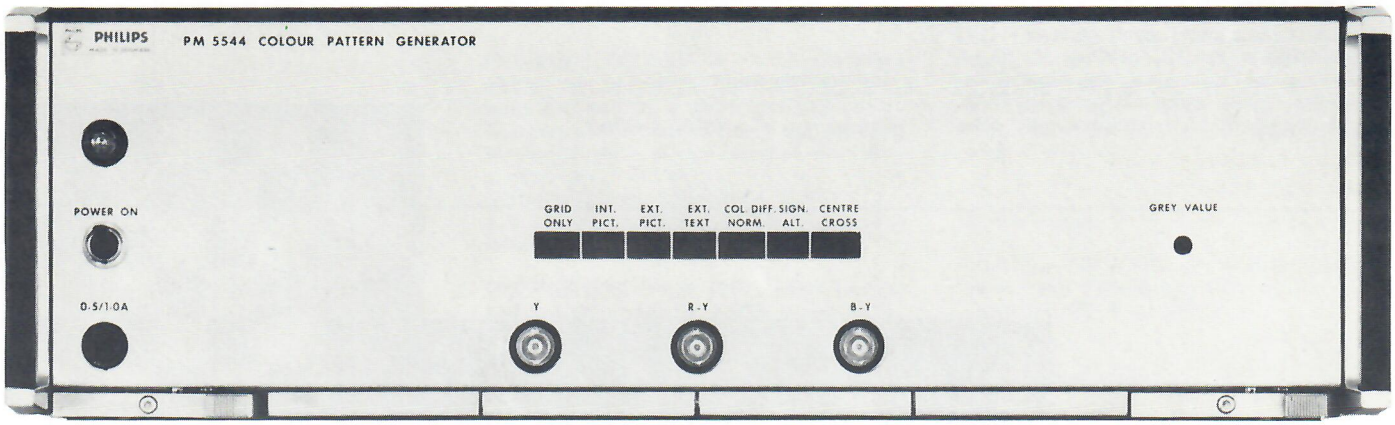
Colour pattern generator

PM 5544G, 625 lines PAL.

PM 5544M/0, 525 lines PAL.

PM 5544M/1, 525 lines NTSC.

PM 5544N, 625 lines PAL (Argentine).

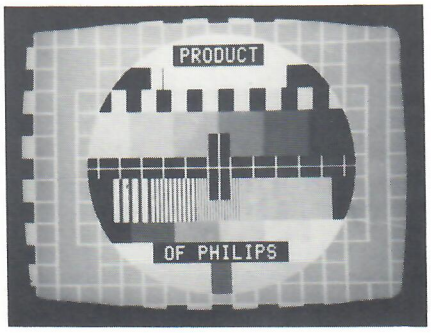


Most recognized receiver test pattern in the world
Used intensively by broadcasting authorities and TV setmakers

Proven reliability and stability

The combined monochrome/colour pattern generator PM 5544 generates an extremely useful test pattern, which by far surpasses previous "test cards" produced by slide and flying spot scanners.

The basic idea behind the design of the pattern is that all parameters - are of importance for the quality of the displayed picture - can be checked by visual inspection of the picture, - on the screen of the TV set itself.



Unique pattern composition allows off-the-screen checking and adjustments of alle important parameters of both colour and monochrome TV sets

PHILIPS has succeeded so well with the PM 5544 pattern that it has so far been accepted by the official authorities in more than 20 countries all over the world as "the test pattern" to be transmitted outside the actual programme hours. All important TV setmakers in the world are using this pattern for the final check and alignment of their TV sets.

The PM 5544 offers very large operational savings compared with optical sources of test patterns. Being mainly a "digital" instrument, most of the circuitry consists of integrated logical circuits, which have high reliability and stable performance that need no frequent readjustments nor suffer from drift by ageing of critical components.

The PM 5544 has two-sets of output signals:
- One set of luminance-colour difference signals, which in combination with the PM 5545 PAL or NTSC encoder offers the optimum quality of the encoded signal.

Digital generation of the circle ensures exact shape without inherent geometry distortion

Facility for built-in text generator for authority identification

- One set of red-green-blue signals to be used with SECAM encoders or other coding devices.

The PM 5543 Text generator can be inserted inside the PM 5544 in order to include in the test pattern two lines of text for transmitter or authority identification.

Pattern composition

The basic pattern outside the circle consists of a cross-hatch surrounded by border castellations. The cross-hatch is used to check geometry distortion (horizontal and vertical linearity) as well as convergence in colour receivers. Part of a cross-hatch is also available inside the circle. The centre cross can be applied for static convergence checks, while the two mentioned areas of cross-hatch are used for checking the dynamic convergence.

The border castellations help cen-

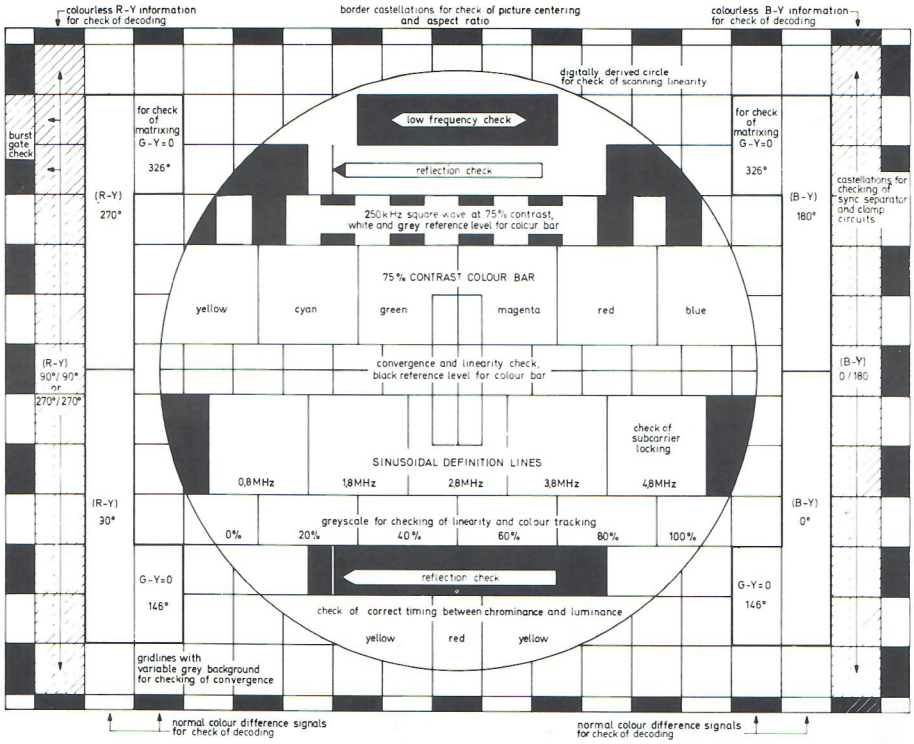
tering the picture on the screen, and exposes insufficiency or malfunction of the sync separator of the set. The two coloured areas outside the circle are the colour difference signals, which appear grey on a bl/wh TV set. Outside these two coloured areas are two vertical bars, which have, after PAL encoding, alternating B-Y and non-alternating R-Y signals so that they appear colourless, when the colour decoder of the set is correctly aligned.

Inside the circle various bl/wh steps, rectangles and needle pulses are used for checking step and pulse response of the set as well as reflections in the antenna and feeder system.

The colour bar and the grey scale signals allow easy setting of the brilliance, contrast, hue and saturation controls. The definition lines can expose lack of high frequency response and are very helpful too, when fine tuning the set to the selected channel.

The yellow-red-yellow colour step shows clearly, when there is a delay error between the bl/wh component and the colour component of the picture.

All together the skilled service engineer, who knows to interpret the pattern, can do a very thorough check on a set, by only observing the picture on the screen of the set.



The circle

The dominating "signal" of the pattern is the circle. This has been incorporated, because the eye is very sensitive to any deviations from the exact circle. Only a TV set with good horizontal and vertical linearity can reproduce the circle in an acceptable way; so the circle presents in fact an extra, sensitive way of checking the geometry distortion.

A circle is included in most existing "test cards", however, PHILIPS was the first to generate a circle without inherent geometry distortion. The circle in the PM 5544 is generated by means of digital circuitry, which is controlled by a PROM (programmable read-only-memory). The PROM stores information about shape of the circle. The only adjustable element in the circle circuitry is the clock oscillator, which is highly stable, and also can be aligned accurately by means of an electronic counter.

In practice this means that any visible distortion of the circle can be allocated fully to the TV set under test.

TECHNICAL DATA PM 5544G and PM 5544N

Pattern composition

SIGNALS INSIDE THE CIRCLE, FROM TOP TO BOTTOM —
1) Black rectangle on white background. Width of rectangle: 11.4 µs.
2) Black/white step with needle pulse. Width of pulse: 225 ns ± 10%.
3) Square wave signal. Repetition frequency: 250 kHz. Amplitude: 75% of white amplitude (same amplitude as R, G and B signals in colour bar and colour step to check saturation in decoders).
4) Colour bar signal. Colours: Yellow, cyan, green, magenta, red and blue. Saturation: 100%. Gain: 75%.
5) Crossed lines. Width vertical lines: 225 ns ± 10% (to give minimum cross talk in colour channel). Structure of horizontal center line: 2 lines, one in each field, reversed in sequence with lines of background (check of interlace). A convergence cross can be switched into the centre of the pattern.
6) Definition lines (sinusoidal). Frequencies: 0.8 - 1.8 - 2.8 - 3.8 and 4.8 MHz (G), 0.5 - 1.0 - 2.0 - 3.0 and 4.0 MHz (N).
7) Staircase. Number of levels: 6 (modification to 10 or 5 levels easy possible).
8) White/black step with needle pulse. Width of pulse: 225 ns ± 10%.
9) Colour step. Colours: Red on yellow background. Width: 2.6 µs. Saturation: 100%. Gain: 75%.
10) Circle. Mode of generation: Binary generated circle with read-only-memory. Diameter: 88% of active vertical amplitude. Error of diameter: < 1%. The video content within the circle can be replaced by an externally applied video signal e.g. from a slide scanner or TV camera. This signal may have full screen size, as it is keyed-in by the circle signal.

SIGNALS OUTSIDE THE CIRCLE — Left hand side of circle:
1) Vertical bar with line alternating positive and negative R-Y signal (gives non-alternating signal after encoding).
2) Vertical bar with positive and negative R-Y signal.
3) Two rectangles with signal G-Y = O (both possible colours). Right hand side of circle:
1) Vertical bar with line alternating positive and negative B-Y signal (gives al-

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ternating signal after encoding).
2) Vertical bar with positive and negative B-Y signal.
3) Two rectangles with signal G-Y = O (both possible colours). The signals can be switched off separately.

BACKGROUND SIGNALS —
1) Cross-hatch. Number: 14 horizontal x 19 vertical lines. Width: 225 ns ± 10%.
2) Background level: Amplitude: Adjustable 0 - 80%.
3) Black/white border castellations.

Input signals

SYNCHRONIZATION — Composite sync and composite blanking signals: 2 - 8 V p-p, negative, looped-through.

EXTERNAL SOURCE IDENTIFICATION SIGNAL — Amplitude: 0.5 - 2 Vp-p, positive, looped-through with or without sync.

EXTERNAL INNER CIRCLE R, G AND B SIGNAL — Amplitude: 0.7 Vp-p with or without sync, positive, looped-through. Frequency response: 6 MHz (3 dB).

Output signals

MAIN OUTPUT — Y, R-Y and B-Y signals. Amplitude: 0.7 Vp-p without sync, positive, impedance 75 Ω. Number of outputs: 1 set at the front, 1 set at the rear.

AUXILIARY OUTPUT — R, G and B signal (matrixed from Y, R-Y, B-Y). Amplitude: 0.7 Vp-p without sync, positive, impedance 75 Ω. Matrixing error: < 2%.

Power supply

Voltage: 230 V (115 V) ± 20% (Internal selection). Frequency: 48 - 65 Hz. Consumption: 50 W at 220 V, 60 W at 220 V, when PM 5543 is inserted.

Temperature range

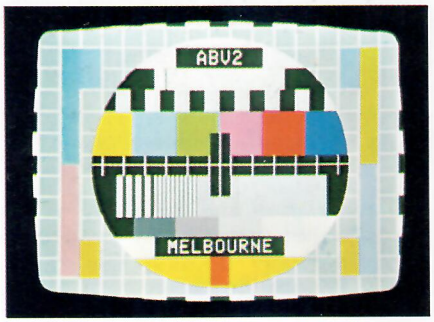
Operating: 0° - 45° C ambient.

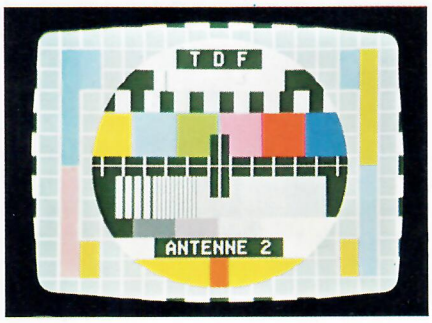
Mechanical data

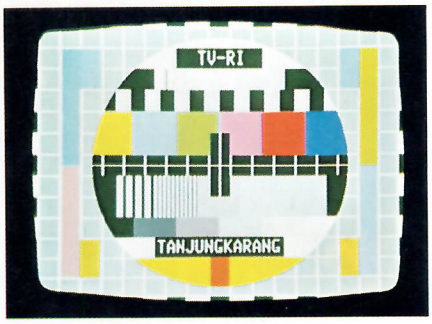
6/6 plug-in unit for the PHILIPS 19" rack/table cabinet.
Height : 132 mm
Width : 444 mm
Depth : 435 mm
Weight : 13.6 kg (incl. cabinet)

Cabinet

The PM 9716 A cabinet is supplied with PM 5544.







TECHNICAL DATA PM 5544M/PAL and PM 5544M/NTSC

Pattern composition

SIGNALS INSIDE THE CIRCLE, FROM TOP TO BOTTOM —
1) Black rectangle on white background. Width of rectangle: 11.4 µs.
2) Black/white step with needle pulse. Width of pulse: 280 ns ± 10%.
3) Square-wave signal. Repetition frequency: 250 kHz. Amplitude: 75% of white amplitude (same amplitude as R, G and B signals in colour bar and colour step to check saturation in decoders).
4) Colour bar signal. Colours: Yellow, cyan, green, magenta, red and blue. Saturation: 100%. Gain: 75%.
5) Crossed lines. Width vertical lines: 280 ns ± 10% (to give minimum cross talk in colour channel). Structure of horizontal center line: 2 lines, one in each field, reversed in squence with lines of background (check of interlace). A convergence cross can be switched into the centre of the pattern.
6) Definition lines (sinusoidal). Frequencies: 0.5 - 1.0 - 2.0 - 3.0 and 4.0 MHz.
7) Staircase. Number of levels: 6 (modification to 10 or 5 levels easy possible).
8) White/black step with needle pulse. Width of pulse: 280 ns ± 10%.
9) Colour step. Colours: Red on yellow background. Width: 2.6 µs. Saturation: 100%. Gain 75%.
10) Circle. Mode of generation: Binary generated circle with read-only-memory. Diameter: 84% of active vertical amplitude. Error of diameter: < 1%. The video content within the circle can be replaced by an externally applied video signal e.g. from a slide scanner or TV camera. This signal may have full screen size, as it is keyed-in by the circle signal.

SIGNALS OUTSIDE THE CIRCLE — Left hand side of circle:
1) Vertical bar with line alternating positive and negative R-Y signal (gives non-alternating signal after PAL encoding).
2) Vertical bar with positive and negative R-Y signal.
3) Two rectangles with signal G-Y = O (both possible colours). Right hand side of circle:
1) Vertical bar with line alternating positive and negative B-Y signal (gives alternating signal after encoding).
2) Vertical bar with positive and negative B-Y signal.
3) Two rectangles with signal G-Y = O (both possible colours). The signals can be switched off separately.

BACKGROUND SIGNALS —
1) Cross-hatch. Number: 14 horizontal x 19 vertical lines. Width: 280 ns ± 10%.
2) Background level: Amplitude: Adjustable 0 - 80%.
3) Black/white border castellations.

Input signals

SYNCHRONIZATION — Composite sync and composite blanking signals: 2 - 8 V p-p, negative, looped-through.

EXTERNAL SOURCE IDENTIFICATION SIGNAL — Amplitude: 0.5 - 2 Vp-p, positive, looped-through with or without sync.

EXTERNAL INNER CIRCLE R, G AND B SIGNAL — Amplitude: 0.7 Vp-p with or without sync, positive, looped-through. Frequency response: 6 MHz (3 dB).

Output signals (PAL)

MAIN OUTPUT — Y, R-Y and B-Y signals. Amplitude: 0.700 Vp-p without sync, positive, impedance 75 Ω. Number of outputs: 1 set at the front, 1 set at the rear.

AUXILIARY OUTPUT — R, G and B signal (matrixed from Y, R-Y, B-Y). Amplitude: 0.700 Vp-p without sync, positive, impedance 75 Ω. Matrixing error: < 2%.

Output signals (NTSC)

MAIN OUTPUT — Y, R-Y and B-Y signals. Amplitude: 0.714 Vp-p without sync, positive, impedance 75 Ω. Number of outputs: 1 set at the front, 1 set at the rear.

AUXILIARY OUTPUT — R, G and B signal (matrixed from Y, R-Y, B-Y). Amplitude: 0.714 Vp-p without sync, positive, impedance 75 Ω. Matrixing error: < 2%.

Power supply

Voltage: 115 V (230 V) ± 20% (Internal selection). Frequency: 48 - 65 Hz. Consumption: 50 W at 110 V, 60 W at 110 V, when PM 5543 is included.

Temperature range

Operating: 0° - 45° C ambient.

Mechanical data

6/6 plug-in unit for the PHILIPS 19" rack/table cabinet.
Height : 132 mm
Width : 444 mm
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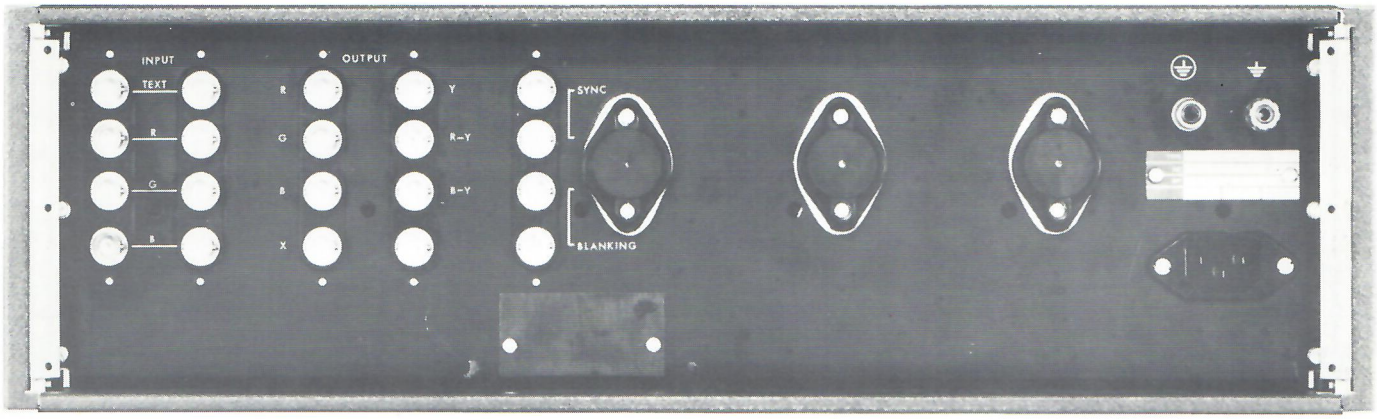
Weight : 13.6 kg (incl. cabinet)

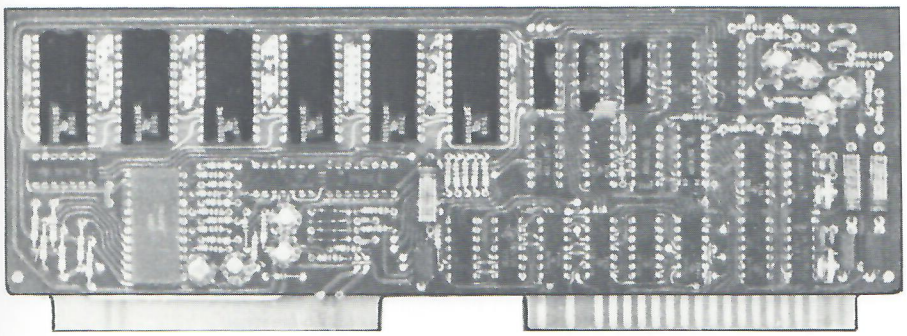
Cabinet

The PM 9716 A cabinet is supplied with PM 5544.



Text generator

PM 5543



Easy way of obtaining text for authority and channel identification in the PM 5544 and PM 5547 pattern generators

Fully electronic circuitry provides stable and reliable performance

Two lines of text are obtainable, each having up to 14 characters

This optional plug-in unit extends the versatility of the pattern generators PM 5544 and PM 5547 by allowing transmitter and channel identification to be inserted in the test pattern. The unit uses very advanced circuitry to store 64 different characters in a 5 x 7 dot matrix, each dot of which is a 0.2 µs wide and 4 TV lines high white square (possibility to make height 2 TV lines). The character sequence is selected by soldering small jumpers onto the print plate.

The characters are seen white against a black background and normally there is a maximum of 2 times 14 characters. However the black rectangles of the PM 5544 are limiting this number and therefore the maximum for the PM 5544 is 7 characters in the upper block and 10 in the lower. By reducing the character height and width these figures can be increased to 9 and 13 respectively.

The dot matrix can also be cut horizontally and/or vertically. This latter format is extremely attractive but demands a higher bandwidth of the display system. For transmitter authorities and outside broadcast units the PM 5544/43 combination provides the most sophisticated, compact and identifiable test pattern source on the market.