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**Technical Information**  
**PLUMBICON IMAGING TUBES: TEST SPECIFICATION**  
April 2004

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**TEST CONDITIONS**


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All tests on Plumbicon tubes are carried out in the manufacturer's test channel under the following conditions:

*Light Source*

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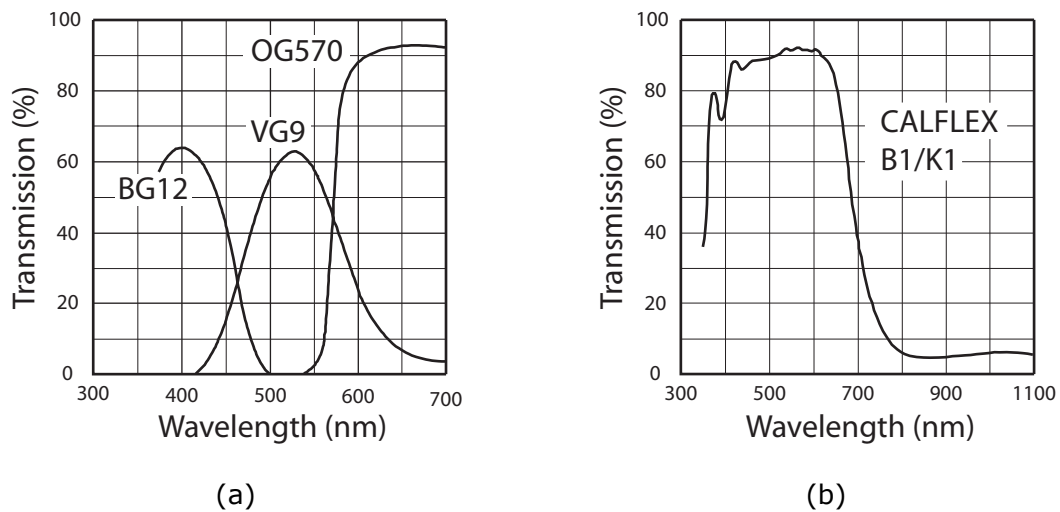
P20 Light distribution (tubes for medical x-ray equipment)

*Filter*

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For tubes with extended red response but without an infrared reflecting filter on the anti-halation glass disc an additional infrared reflecting filter is inserted into the light path. The filter used is Balzers Calflex B1/K1

For x-ray tubes: Schott VG9, thickness 1mm



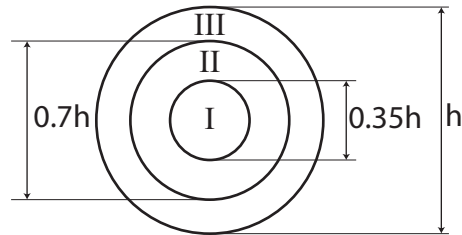
**Figure 1.** (a) Transmission of filters BG12, VG9 and OG570. (b) Typical transmission curve of heat reflecting interference filter CALFLEX B1/K1.

*Test Transparency*

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The back illuminated test transparency is projected onto the target by means of a high quality lens, producing an even illumination on the specified scanned area.

A circular test transparency is used for the evaluation of tubes for medical x-ray equipment. The area of the chart is divided into three quality zones by two concentric circles as shown in figure 2.

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**Figure 2.** Format of test transparency.

***Video Amplifier***

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The video amplifier frequency response is essentially flat up to 5MHz, with a sharp fall-off to 6MHz.

***Gamma/Aperture Correction***

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No gamma correction or aperture correction are applied to the video amplifier.

***Light Level***

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The light level on the Plumbicon tube target is adjusted to produce a peak signal current  $I_s$  of 0.1 $\mu$ A.

***Electrical Setting***

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The electrical settings of the tubes are in accordance with its published data and the "Instructions for use".

***Beam Current***

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The beam current of the Plumbicon tube is adjusted to just stabilize a peak signal current,  $I_b$ , of 0.2  $\mu$ A.

***Monitor***

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The obtained picture is observed on a monitor producing non-blooming white.

**SPURIOUS SIGNAL SPECIFICATION**

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***Blemishes***

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Both spots (sharply defined) and smudges (with vague contours) are termed blemishes. Blemishes are small areas producing uneven modulation of any signal current between black level (black current) and white level (peak signal current) [1].

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Dimensions of blemishes in % of picture height	Permitted number of blemishes		
	Zone I	Zone II	Zone III
>0.7%	0	0	0
≤0.7% but >0.45%	0	0	0
≤0.45% but >0.2%	3 in any zone		
≤0.2%	[2]		
Total permitted number of blemishes (maximum)	3		

**Table 1.** Number, size and location of blemishes allowed in Plumbicon tube.

[1] Blemishes with contrast ≤6% (if black) and ≤3% (if white) are neglected

[2] Blemishes of this size are not counted unless their concentration causes a smudged appearance. Such concentrations are evaluated as blemishes and as contrast, the average contrast of the concentration is taken.

### Sensitivity

The luminous sensitivity is measured under the following conditions:

- Light source color temperature is 2856K
- Appropriate filter inserted in light path
- The illuminance level of the white light at the faceplate or for chrominance tubes before the filter is adjusted to 4.54lx.

For 25mm tubes the signal current reading should be multiplied by 1.8

### Resolution

Resolution is measured with a 50mm Leitz Summicron lens having a sine response of approximately 85% at 400 TV lines at f:5.6 for 25mm tubes.

The resolution is measured with the appropriate color filter inserted in the light path as described in section 0.

The beam current and signal current are to be adjusted as indicated in the relevant tube data. The horizontal amplitude response can be raised by the application of suitable correction circuits.

**PLUMBICON IMAGING TUBES: TEST SPECIFICATION***Lag*

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Lag is measured with the appropriate color filters inserted in the light path. Beam current and signal current are to be adjusted as indicated in the relevant tube data.

Build-up lag is measured after a after a minimum of 10s of darkness. The figures are typically percentages of the ultimate signal current obtained after 50ms, 60ms and 200ms respectively after the introduction of the illuminance.

Decay lag is measured after a minimum of 5s of illumination on the target. The figures represent typical residual signals in percentages of the original signal current 50ms, 60ms and 200ms respectively after the removal of the illuminance.