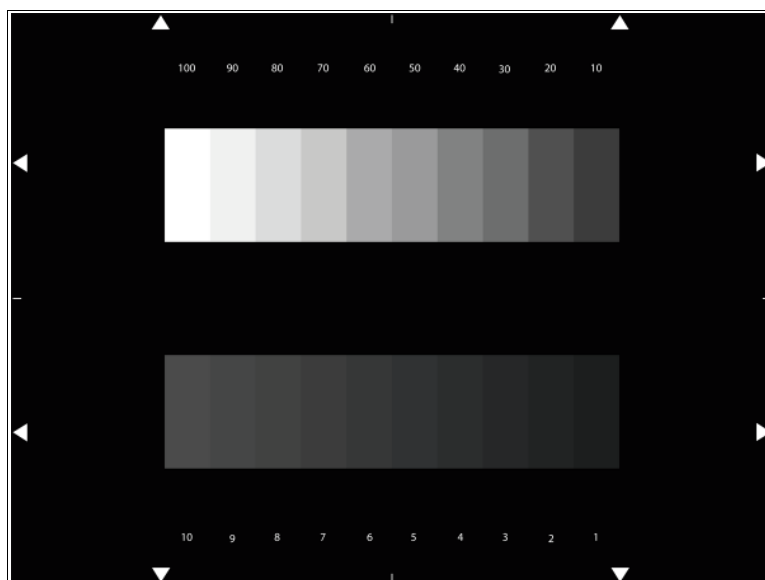




# GAMMA MEASURING TEST CHART

## TRANSPARENCY



The TE205 is designed to check the gamma settings of the camera.

The test chart shows two gray scales with the transmission values:

| Upper row (%) | Bottom row (%) |
|---------------|----------------|
| 100           | 10             |
| 90            | 9              |
| 80            | 8              |
| 70            | 7              |
| 60            | 6              |
| 50            | 5              |
| 40            | 4              |
| 30            | 3              |
| 20            | 2              |
| 10            | 1              |

The tolerances of the values are +/- 0.5 %

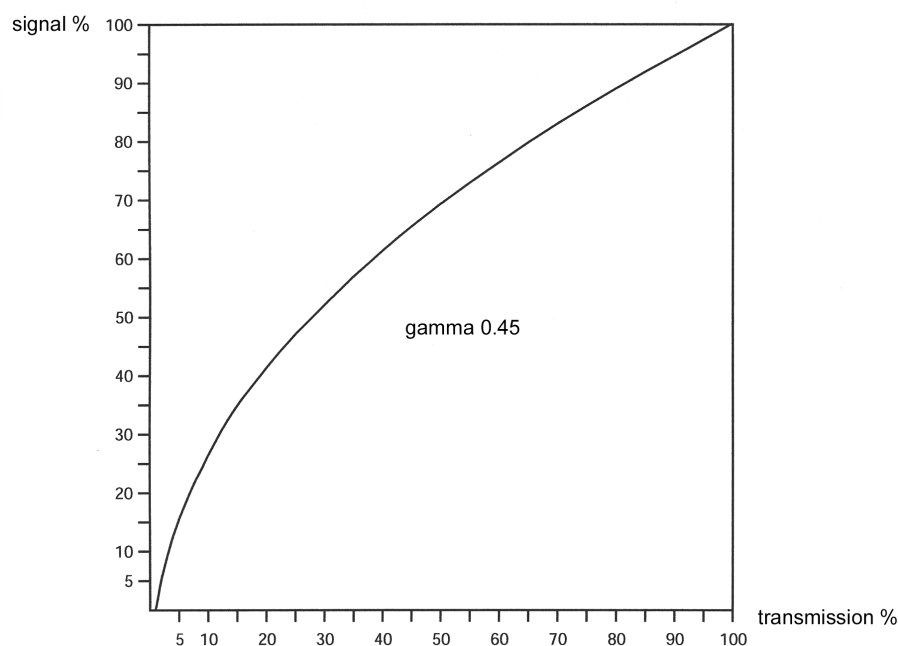


The method of use should be set the 100% step to 700 mV and the 0% to 0mV.

A problem is that several makes of camera deliberately crush the blacks to give an improved noise performance. This makes it very difficult to set the master black correctly to 0 mV. In practice one should set the master lift so that the noise in the blacks just begins to show on the waveform trace. One then should set the waveform monitor (best choice Tektronix 1781) to "relative" mode and with the cursors on the black and 100% steps, press "reference". The scope then reads off directly in %. It is best to use a low pass or luminance filter to restrict the bandwidth. This should all be done with the required gamma law selected on the camera (unless you are using linear gamma to calibrate the chart which also assumes that when the camera is selected to linear it really is linear). Then one needs to know what a chosen gamma law should output for the various input levels.

For a gamma of 0.45 (over the whole range) the signal (%) should be:

| transmission(%) | signal (%) | transmission (%) | signal (%) |
|-----------------|------------|------------------|------------|
| 100             | 100.0      | 10               | 26.3       |
| 90              | 94.7       | 9                | 24.2       |
| 80              | 89.1       | 8                | 22.4       |
| 70              | 83.1       | 7                | 20.2       |
| 60              | 76.5       | 6                | 17.9       |
| 50              | 69.4       | 5                | 15.4       |
| 40              | 61.4       | 4                | 12.6       |
| 30              | 52.2       | 3                | 9.3        |
| 20              | 41.1       | 2                | 5.4        |
| 10              | 26.3       | 1                | 0.1        |



Besides the 0.45 gamma there are other gamma laws in use, i.e. at the BBC. The BBC-gamma has an initial slope of 5 times for the first 4% (approx.) of input and then goes into a gamma curve of 0.4. The 4% step then should give 20% output and the 20% input should give 50% output. The initial slope is usually fixed so the camera variable gamma would be set to give the required 50% output from the 20% step of the chart.