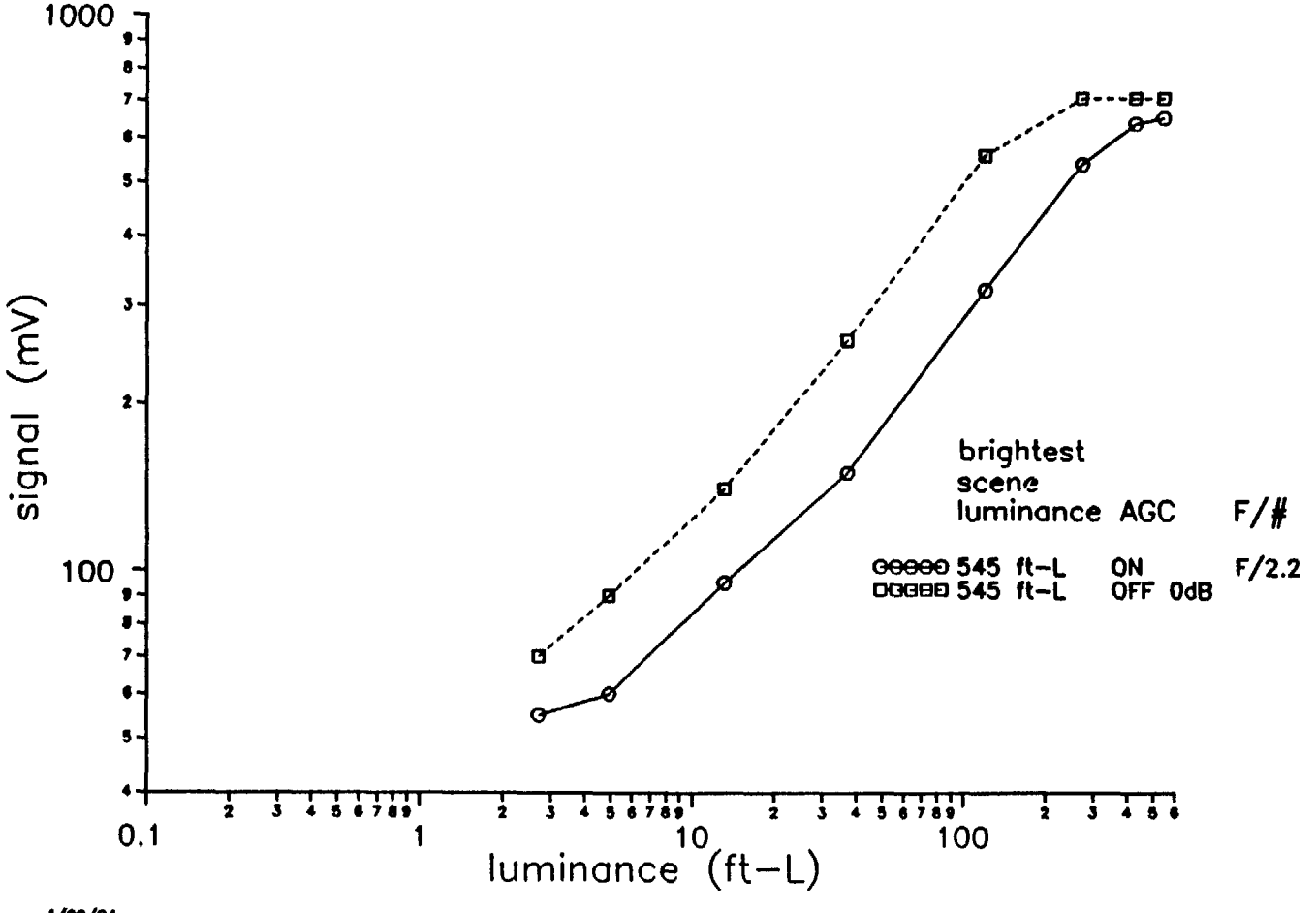
Appendix B: Sony 711 Camera Calibration Data

SONY XC-711 CCD CAMERA CHARACTERIZATION TEST DESCRIPTION

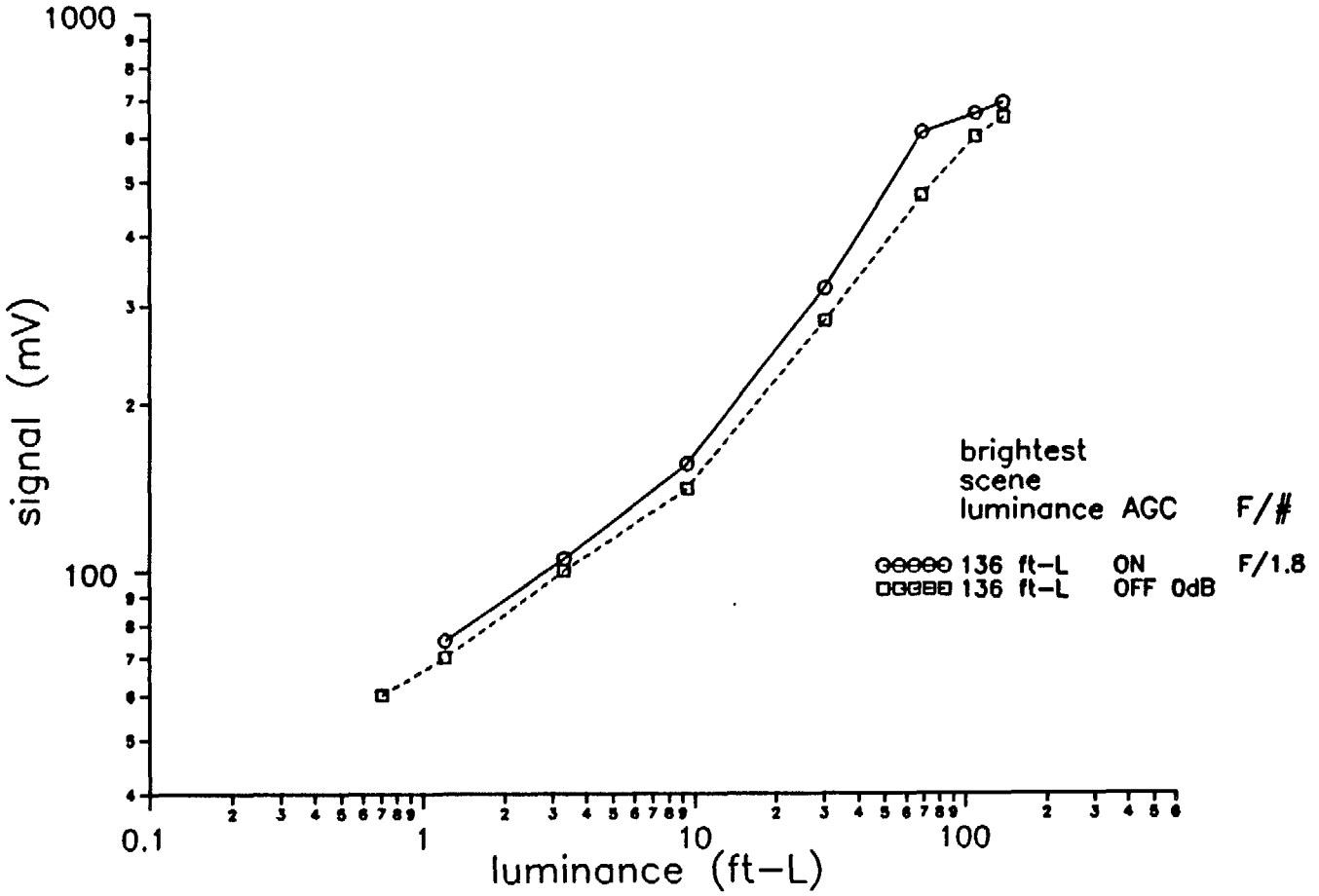
The camera characterization tests conducted on the SONY XC-711 CCD color camera with the Computar M10Z-1118AMS zoom lens included signal transfer tests and noise measurements. The camera system was set with gamma correction off, electronic shutter off, and gain control setting at AGC on and AGC off (0dB gain). The signal transfer characteristics were tested using a grayscale chart, a light box, a monitor and an oscilloscope. The output waveforms of the video, red, green and blue channels were recorded to obtain the signal transfer curves at various scene luminance levels and to characterize the AGC of the camera system. The camera signal output (in millivolts above blanking level) recorded as a function of the scene luminance (in footlamberts), the brightest scene luminance, and AGC action are plotted in the 16 figures enclosed. In each of the four channels (video, red, green, and blue), the responses of the SONY XC-711 camera system with and without AGC were measured for the four brightest scene luminance levels. The curves indicate that the camera begins to saturate at scene luminance levels above ~200 footlamberts without the AGC. With AGC on at these high scene luminance levels, the camera reduces the signal transfer curve to prevent signal saturation. On the other hand, when brightest scene luminance levels are reduced, the camera attempts to increase the signal transfer curve to fully utilize its dynamic range. The noise levels of the four channels were also measured on the oscilloscope. The average peak-to-peak noise levels measured with the AGC on for the four channels are: 30 mVp-p for the video channel, 30 mVp-p for the red channel, 25 mVp-p for the green channel and 35 mVp-p for the blue channel. Also included in this package are the spectral characteristics of the camera and the lens as specified by the manufacturers.

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
VIDEO CHANNEL



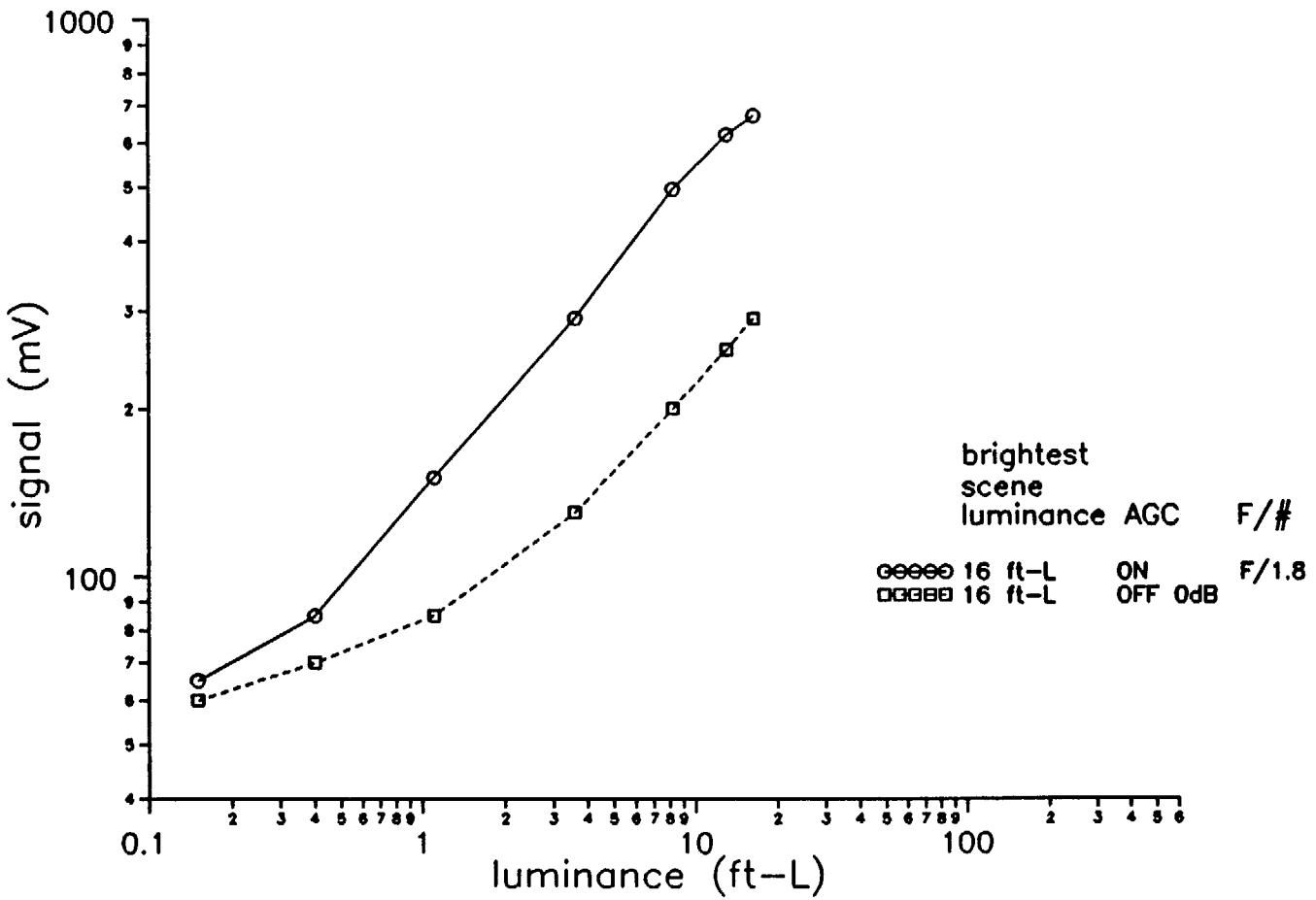
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
VIDEO CHANNEL



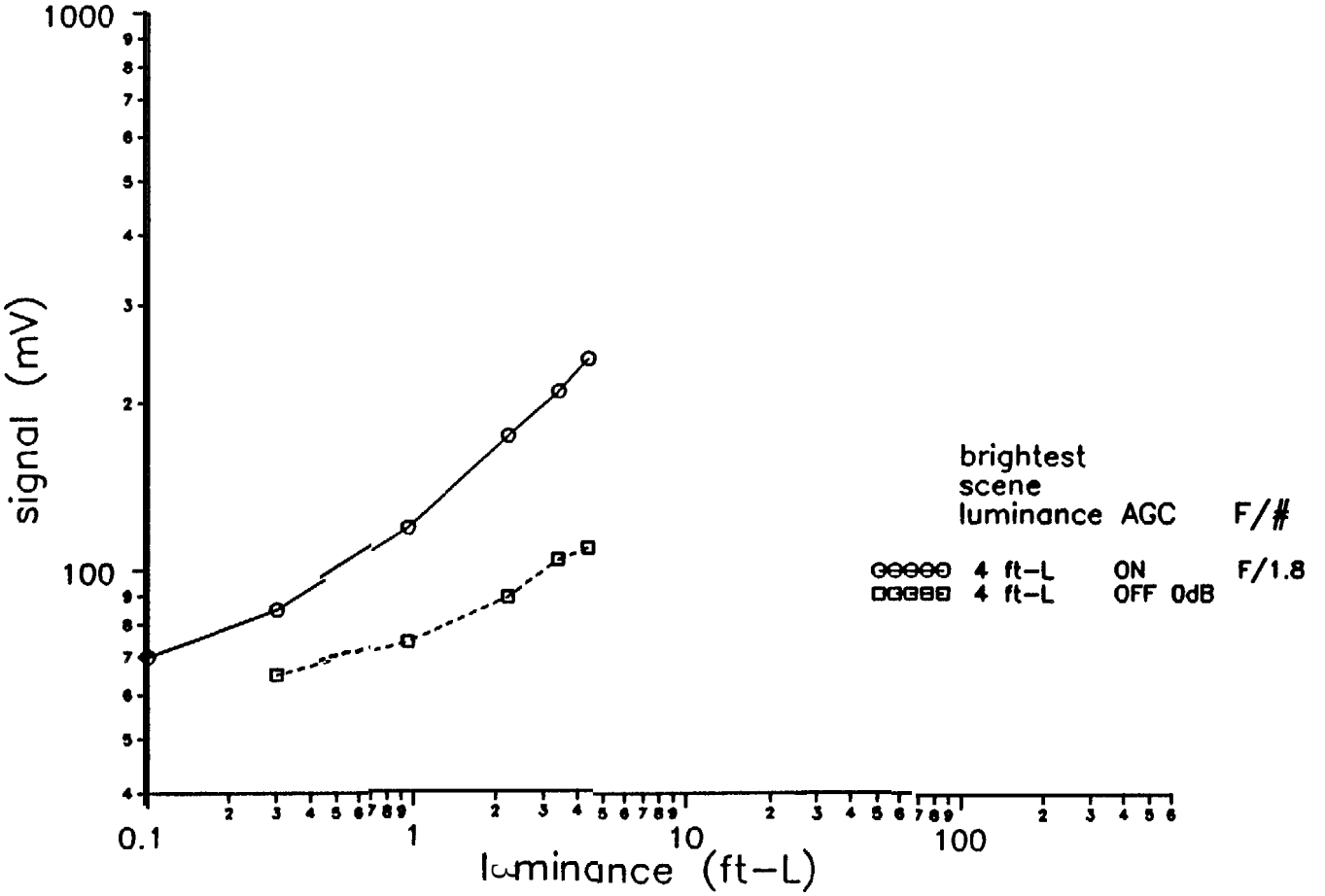
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
VIDEO CHANNEL



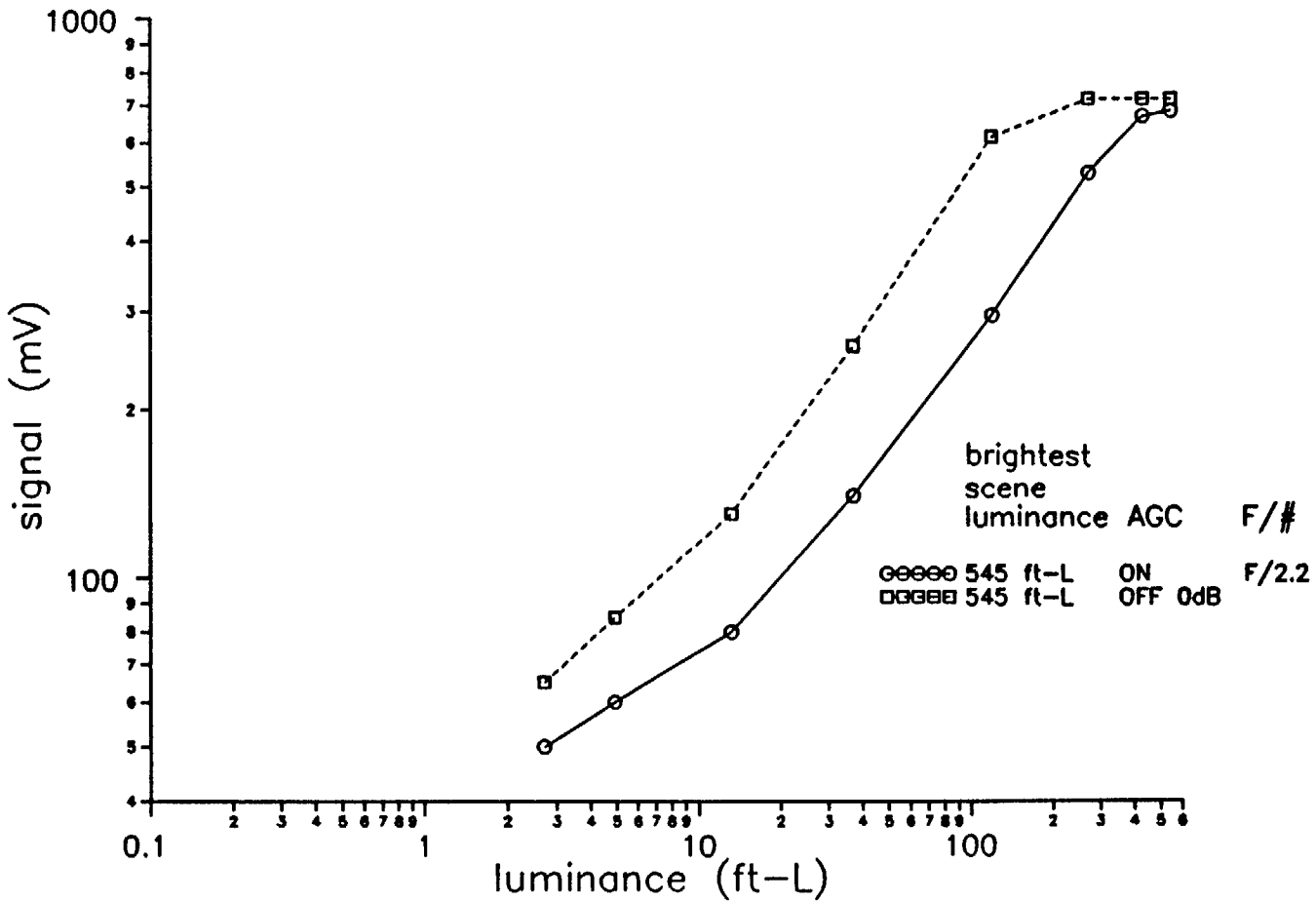
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
VIDEO CHANNEL



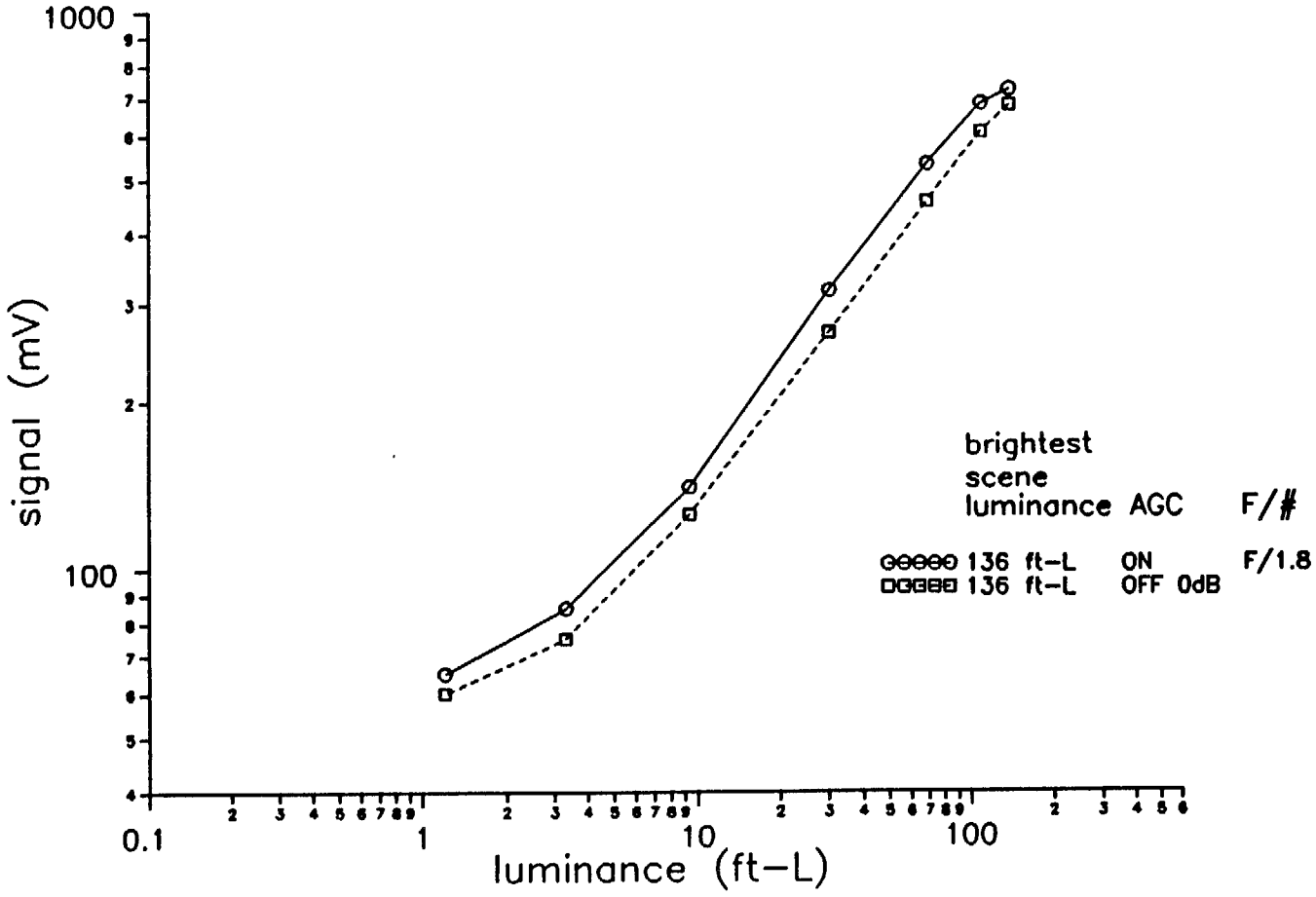
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
RED CHANNEL



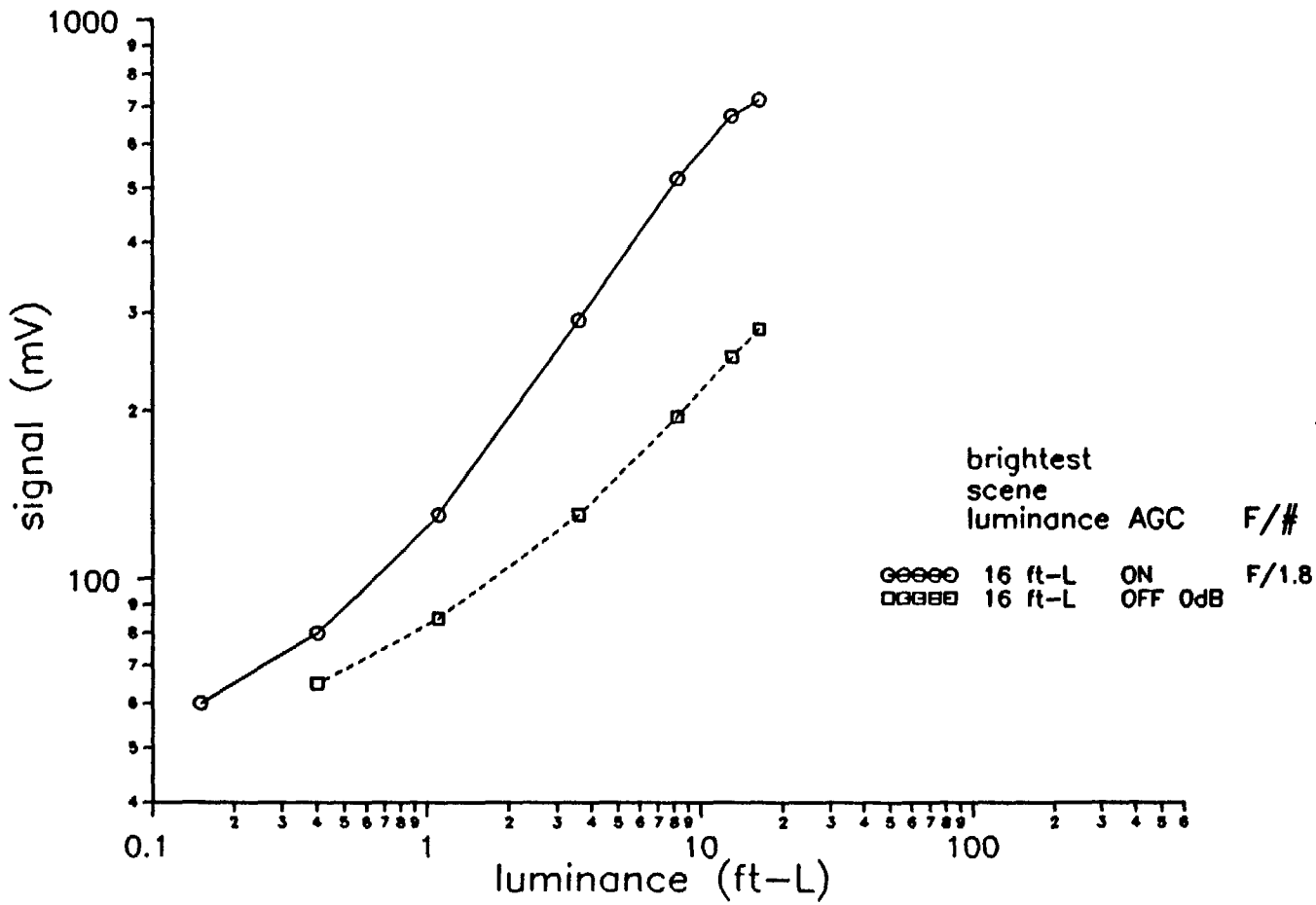
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
RED CHANNEL



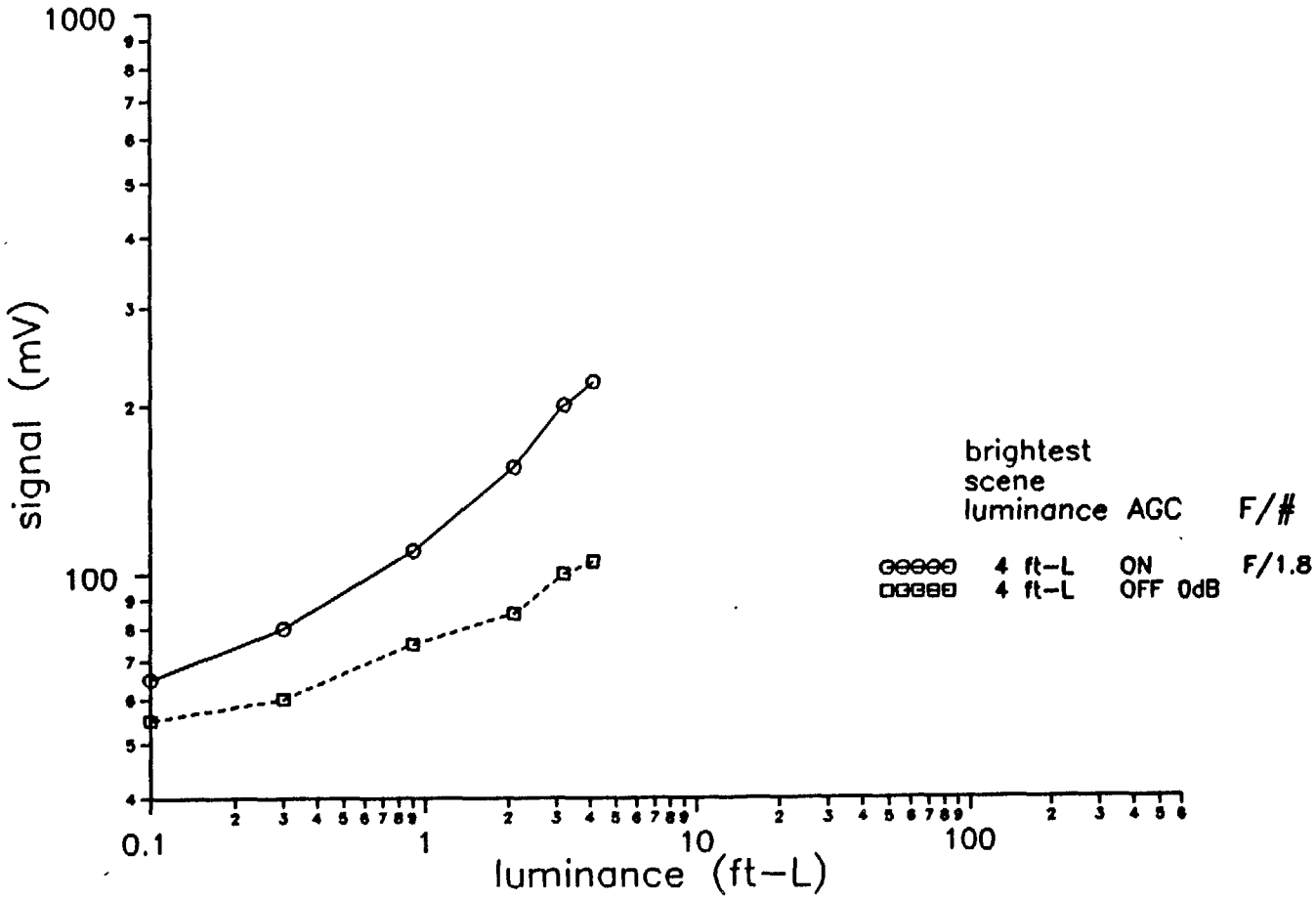
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
RED CHANNEL



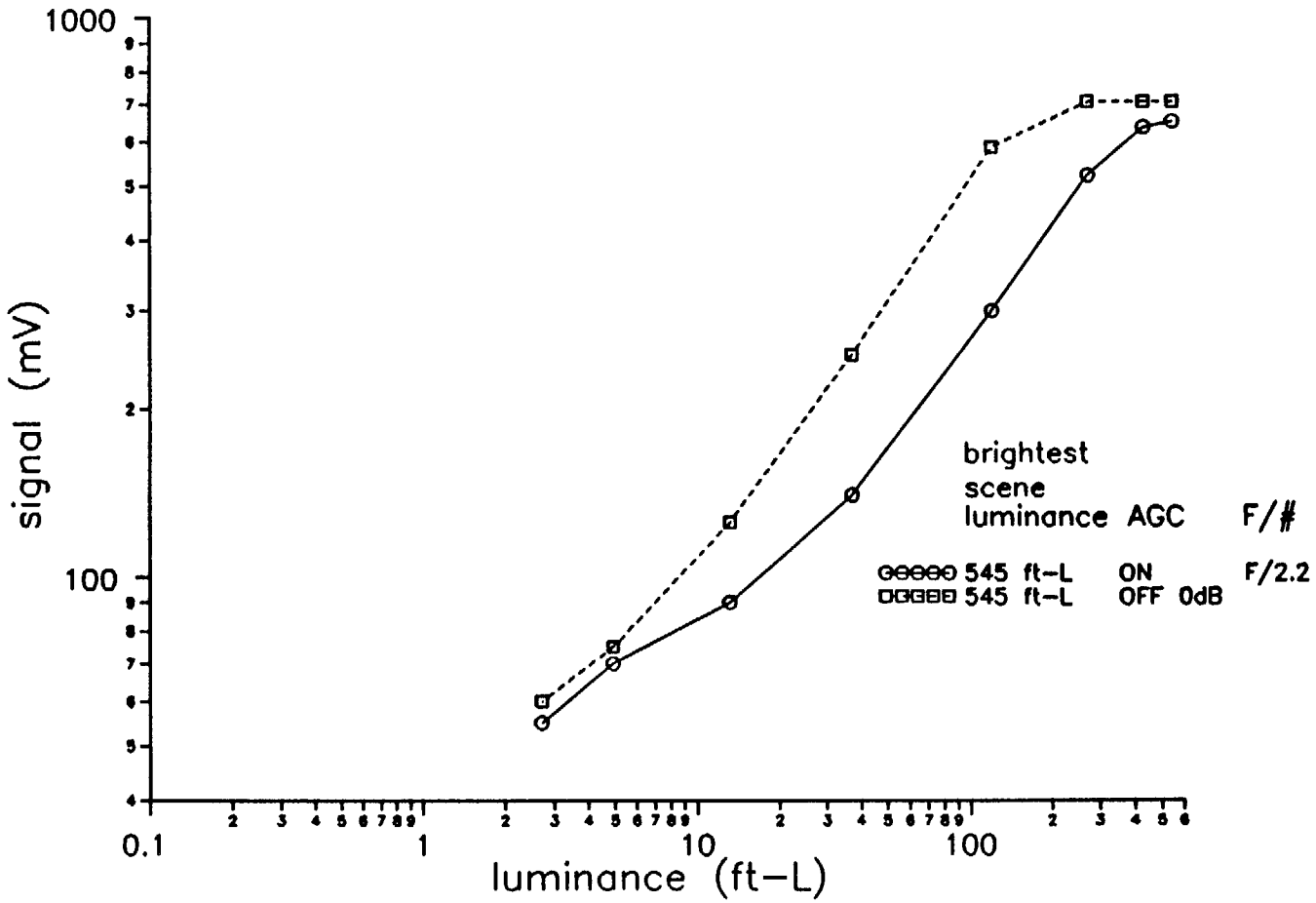
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
RED CHANNEL



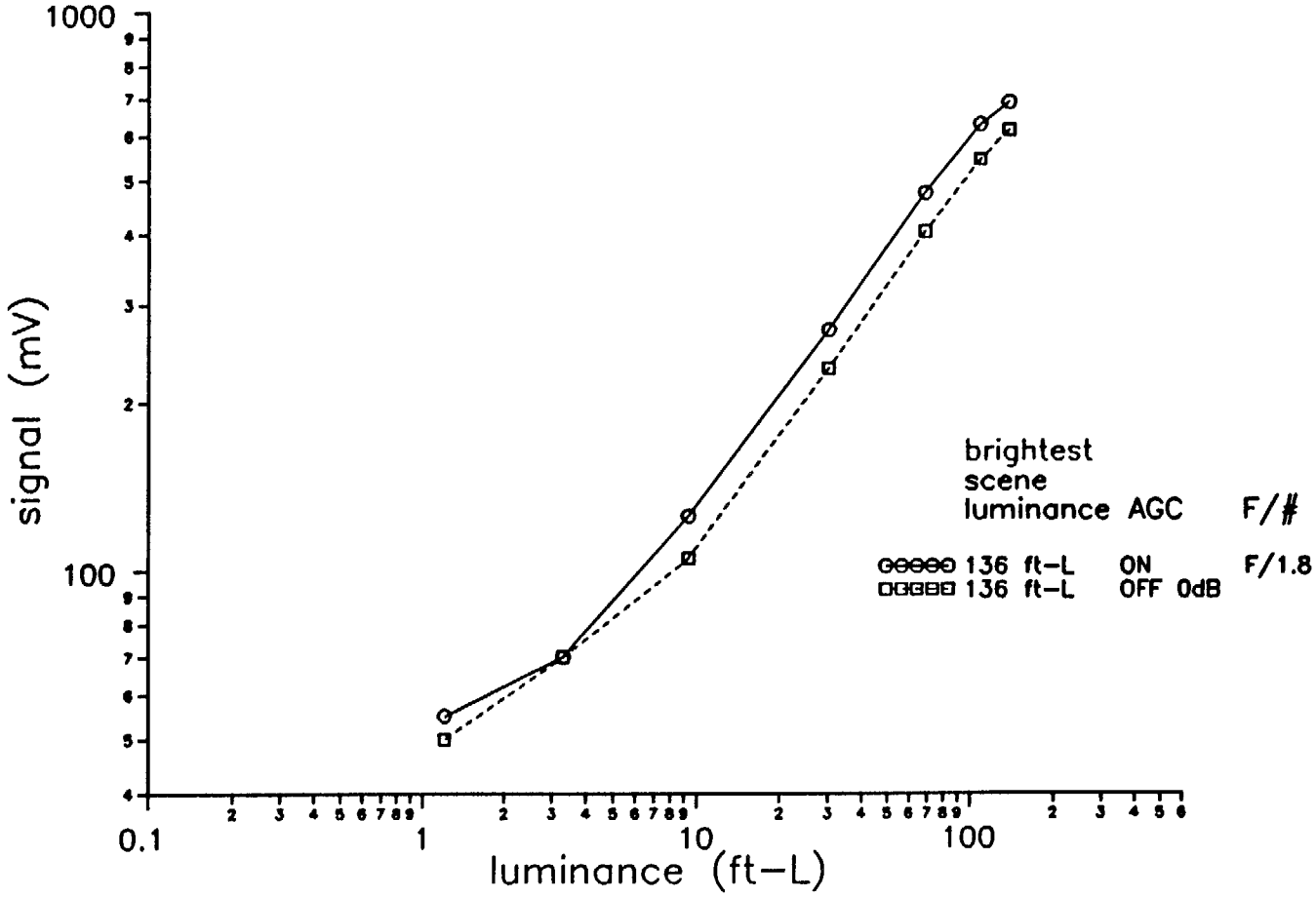
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
GREEN CHANNEL



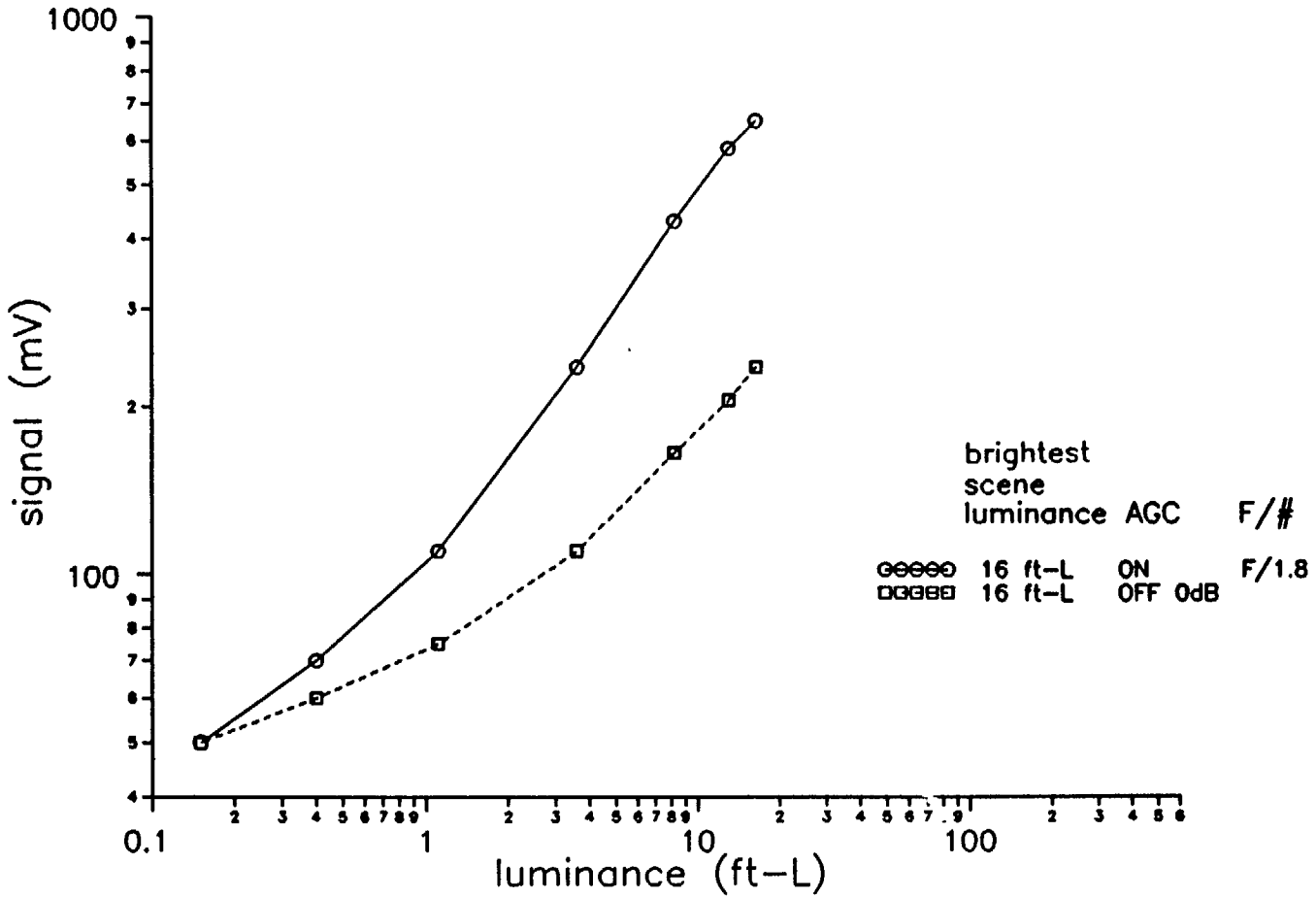
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
GREEN CHANNEL



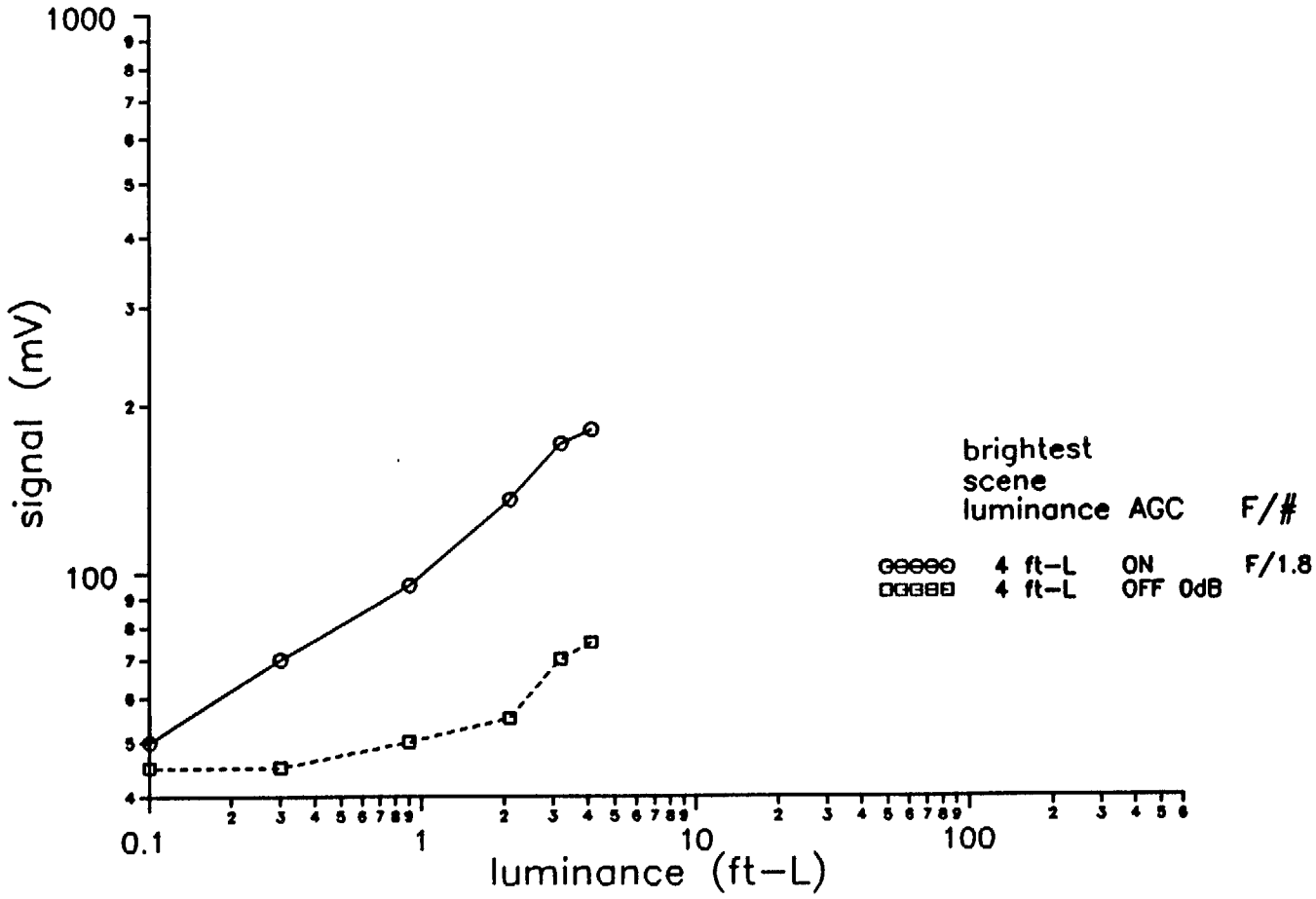
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
GREEN CHANNEL



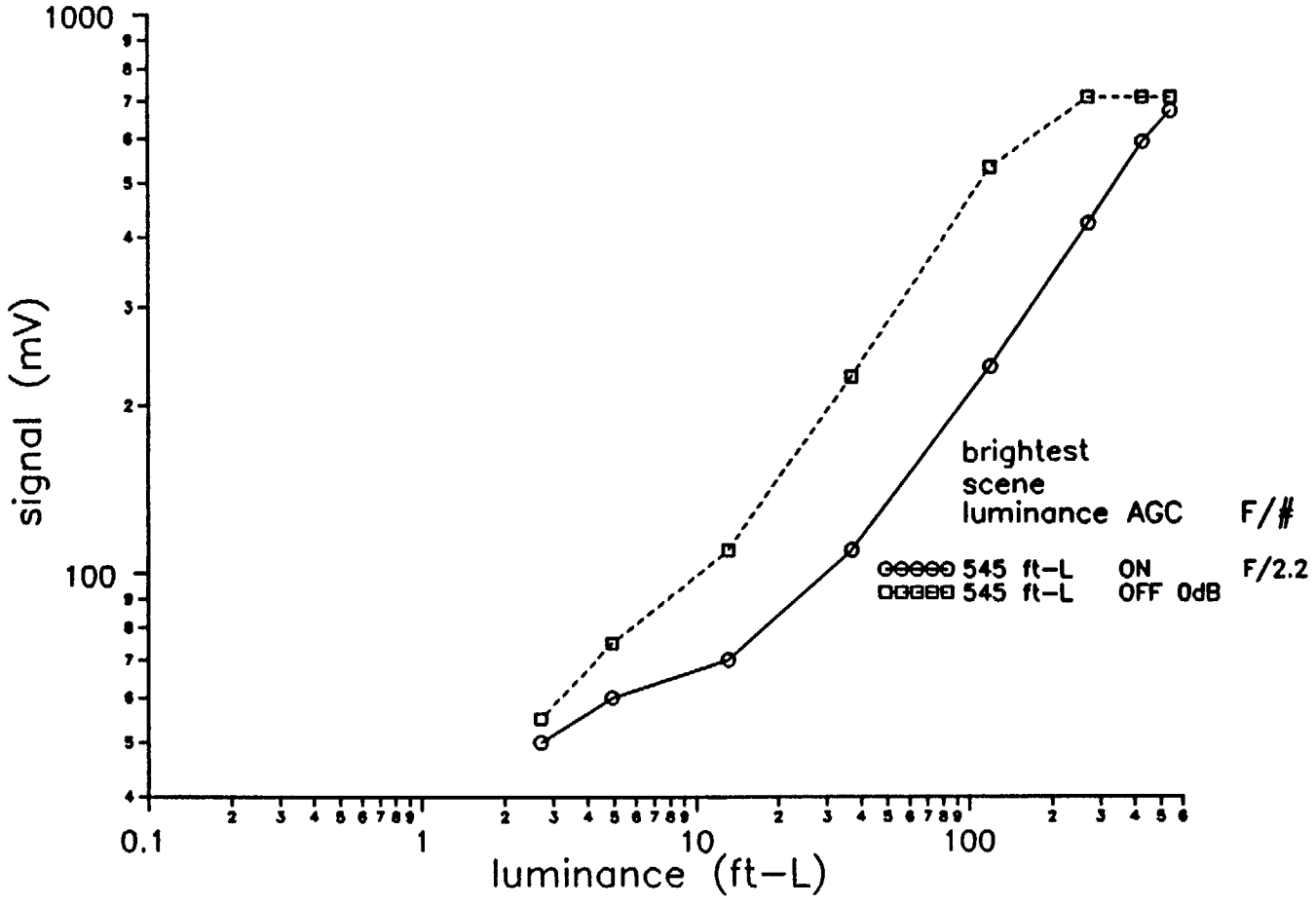
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
GREEN CHANNEL



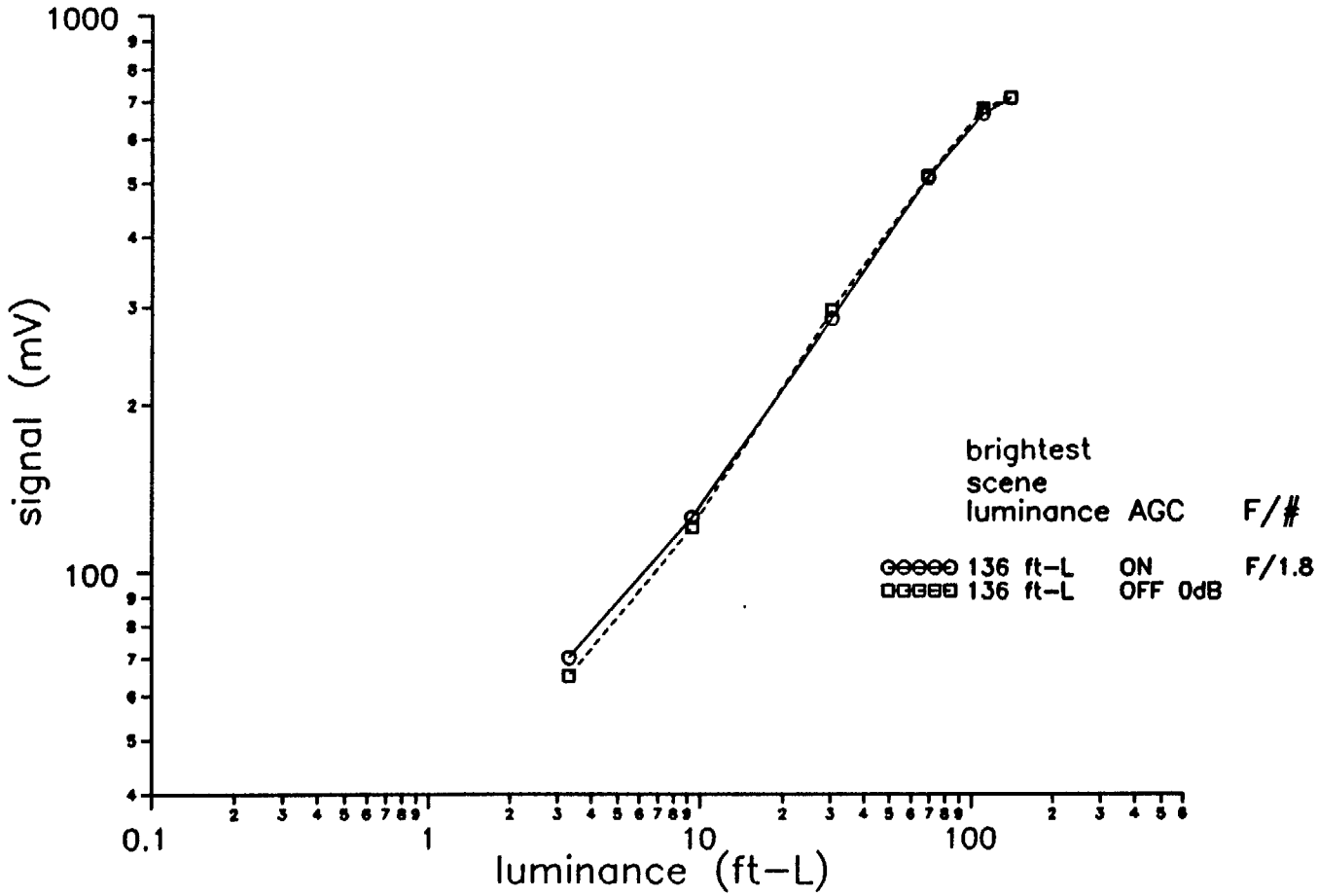
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
BLUE CHANNEL



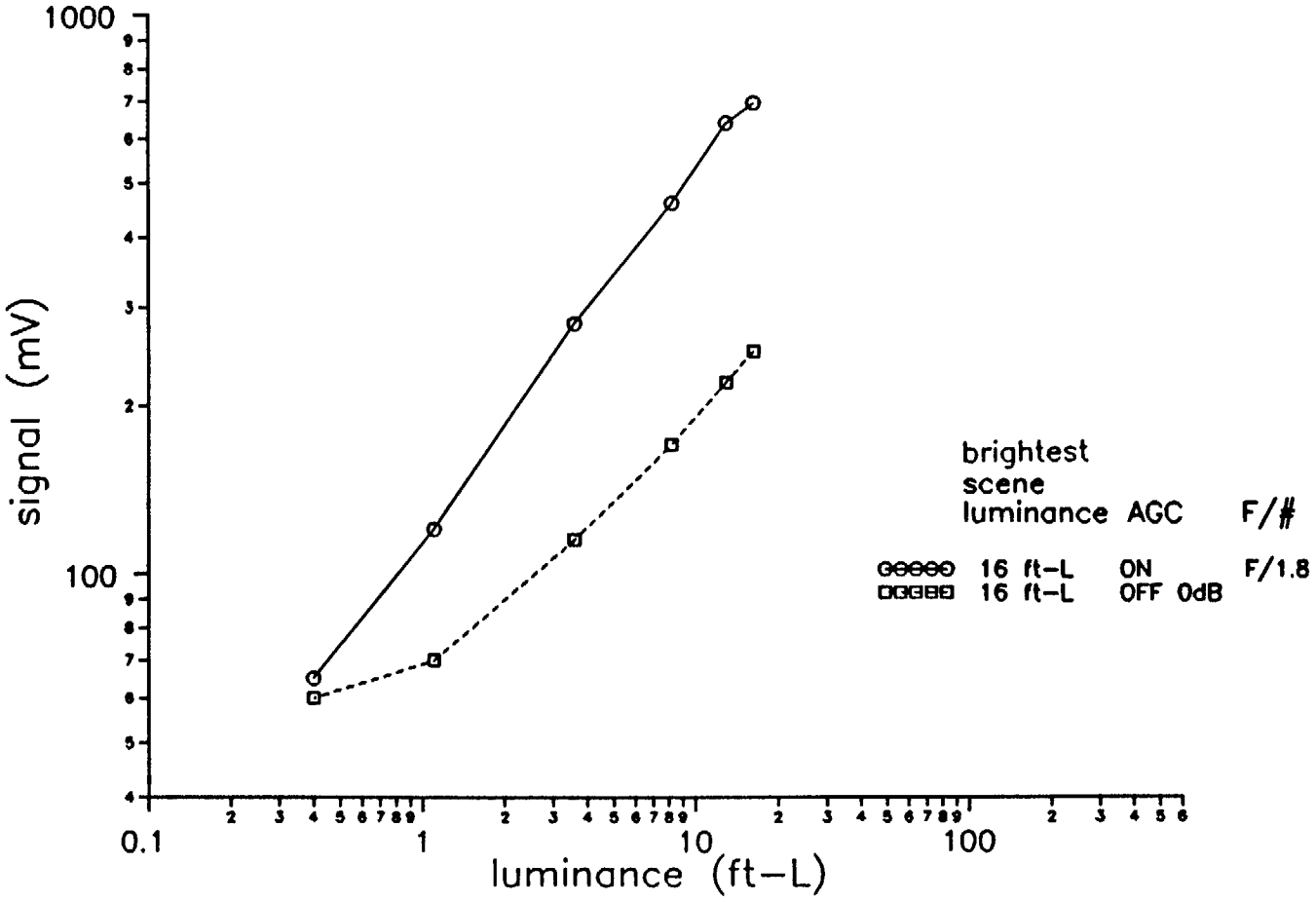
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
BLUE CHANNEL



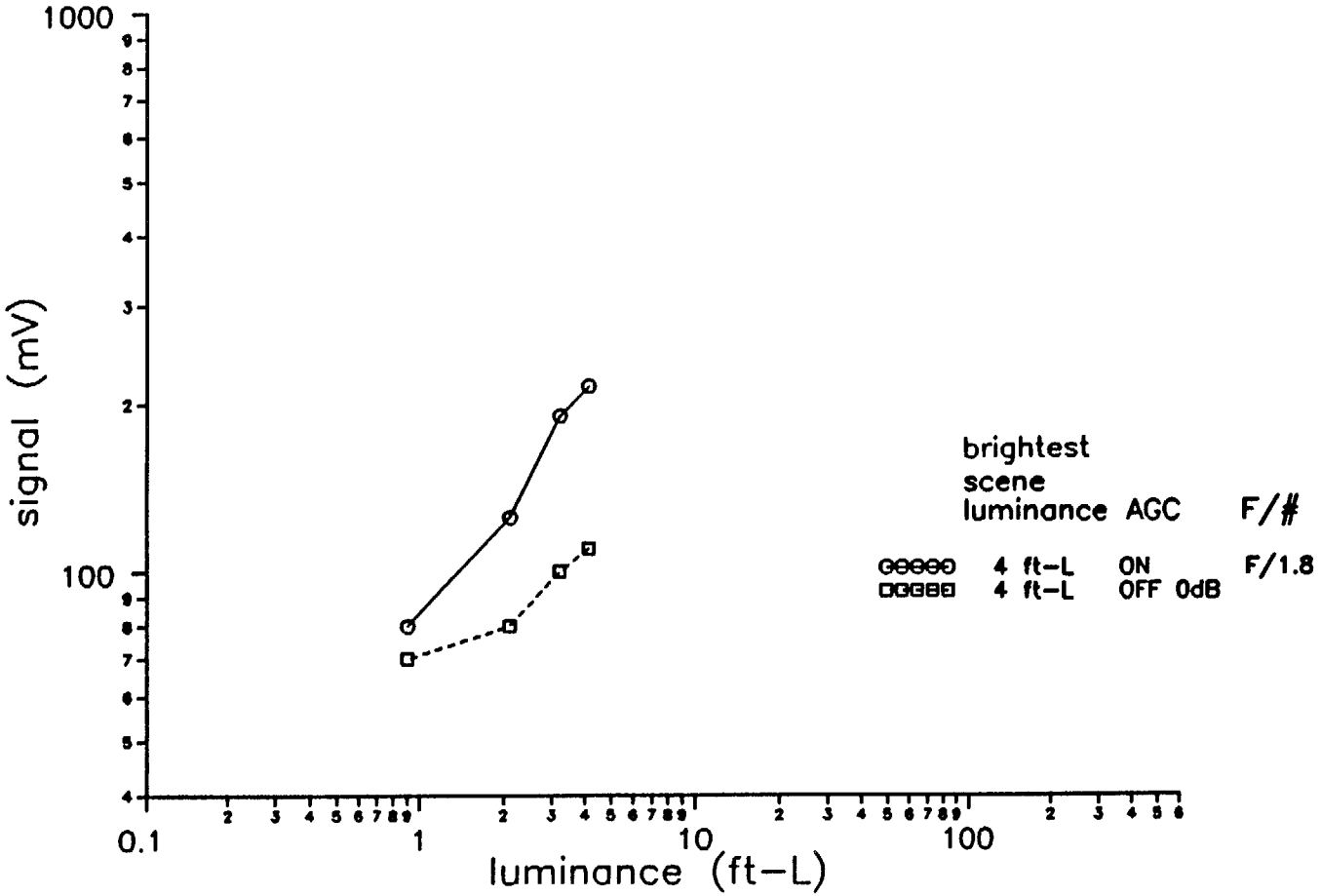
4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
BLUE CHANNEL

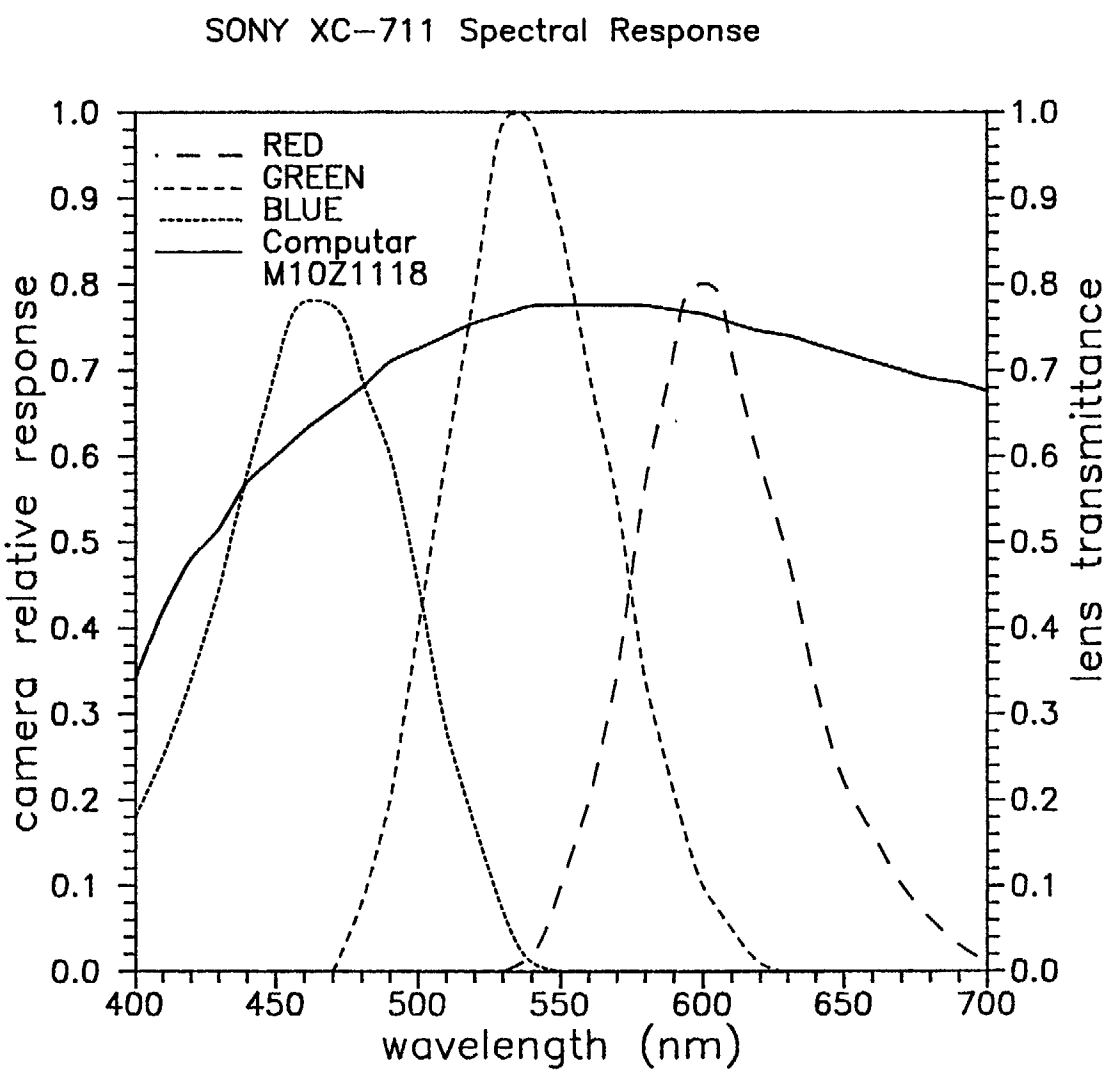


4/22/94

SONY XC-711 CAMERA SIGNAL TRANSFER CHARACTERISTIC
BLUE CHANNEL



4/22/94


SONY XC-711 Spectral Response
RED
GREEN
BLUE
Computar
M10Z1118
camera relative response
lens transmittance
wavelength (nm)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
400
450
500
550
600
650
700