

1-1/2" DIAMETER

MAGNETIC FOCUS

MAGNETIC DEFLECTION

For Broadcast Film-Pickup or Data Transmission with
Color or Black-and-White TV Cameras Requiring
Resolutions of more than 1200 TV Lines

General:

Heater, for Unipotential Cathode:

Voltage (AC or DC) $6.3 \pm 10\%$ volts

Current at 6.3 volts 0.6 amp

Direct Interelectrode Capacitance:^a

Target to all other electrodes 8.0 pf

Spectral Response S-18

Wavelength of Maximum Response 4500 +500 -300 angstroms

Photoconductive Layer:

Maximum useful diagonal of rectangular
image (4 x 3 aspect ratio)^b 1"

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length $7.75" \pm 0.25"$

Greatest Diameter $1.59" \pm 0.01"$

Bulb Diameter $1.50" \pm 0.01"$ ←

Operating Position Any

Weight (Approx.) 5.25 oz

Bulb T12

Focusing-Alignment Assembly Cleveland Electronics^c

No.15-VFA-259, or equivalent

Deflecting Yoke^d Cleveland Electronics^c

No.15-VY-258, or equivalent

Socket Alden^e No.208-SBSDC, or equivalent ←

Base Small-Button Super-Ditetra 8-Pin (JEDEC No.E8-78)

Basing Designation for BOTTOM VIEW 8LB

Pin 1-Heater

Pin 2-Grid No.1

Pin 3-Do Not Use

Pin 4-Grid No.4

Pin 5-Grid No.2

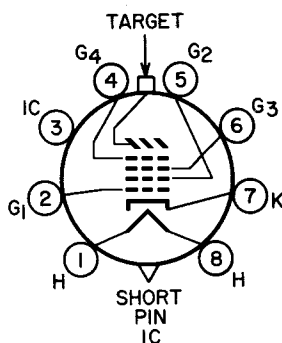
Pin 6-Grid No.3

Pin 7-Cathode

Pin 8-Heater

Flange-Target

Short Pin-Do Not Use



DIRECTION OF LIGHT:
INTO FACE END OF TUBE

Maximum Ratings, Absolute-Maximum Values:

For scanned area of 0.6" x 0.8"

Grid-No.4 Voltage 1500 volts

Grid-No.3 Voltage 1500 volts

← Indicates a change.



Grid-No.2 Voltage.	550	volts
Grid-No.1 Voltage:		
Negative-bias value.	300	volts
Positive-bias value.	0	volts
Peak Heater-Cathode Voltage:		
Heater negative with respect to cathode.	125	volts
Heater positive with respect to cathode.	10	volts
Target Voltage	125	volts
Dark Current	0.25	μ a
Peak Target Current ^f	0.60	μ a
Faceplate:		
Illumination	1000	fc
Temperature.	71	°C

→ Typical Operation:

*For scanned area of 0.6" x 0.8" and
faceplate temperature of 30° to 35° C*

Grid-No.4 (Decelerator) Voltage ^g	1400	volts
Grid-No.3 (Beam-Focus Electrode) Voltage ^h	800 to 1000	volts
Grid-No.2 (Accelerator) Voltage.	300	volts
Grid-No.1 Voltage for picture cutoff ^j	-45 to -100	volts
Average "Gamma" of Transfer Characteristic for signal-output current between 0.02 μ a and 0.6 μ a.	0.65	
Minimum Peak-to-Peak Blanking Voltage:		
When applied to grid No.1.	75	volts
When applied to cathode.	20	volts
Lag: ^k		
Maximum value.	33	%
Typical value.	25	%
Limiting Resolution:		
At center of picture—		
Typical value.	1500	TV lines
Minimum value.	1200	TV lines
At corners of picture—		
Typical value.	900	TV lines
Amplitude Response to a 400 TV Line Square— Wave Test Pattern at Center of Picture:		
Minimum value.	60	%
Field Strength at Center of Focusing Coil (Approx.).	46	gauss
Field Strength of Adjustable Alignment Coil ^m	0 to 4	gauss
Peak Deflecting-Coil Current for Specified Deflecting Yoke:		
Horizontal	240	ma
Vertical	50	ma

Average-Sensitivity Operation

Faceplate Illumination (Highlight)	10	fc
Target Voltage ^{n, p}	20 to 50	volts
Dark Current ^q	0.02	μ a
Signal-Output Current ^r (Typical)	0.5	μ a

→ Indicates a change.



Minimum-Lag Operation

Faceplate Illumination (Highlight)	50	fc
Target Voltage ^{n, p}	10 to 30	volts
Dark Current ^q	0.005	μ a
Signal-Output Current ^r (Typical)	0.5	μ a

^a This capacitance, which effectively is the output impedance of the 8051 is increased when the tube is mounted in the deflecting-yoke and focusing-alignment assembly. The resistive component of the output impedance is in the order of 100 megohms.

^b Proper orientation of quality rectangle is obtained when the horizontal scan is essentially parallel to the plane passing through the axis and short index pin. The masking is for orientation only and does not define the proper scanned area of photoconductive layer. Final orientation should be such that the image also fits inside of any internal mask of the mesh assembly.

^c Cleveland Electronics Inc., 1974 East 61st St., Cleveland, Ohio.

^d For minimum geometric distortion, the deflecting yoke should be located in its proper axial position 3/4-inch from the face of the tube.

^e Alden Products Co., 9140 North Main Street, Brockton 64, Mass.

^f Video amplifiers must be designed properly to handle target currents of this magnitude to avoid amplifier overload or picture distortion.

^g Grid-No. 4 voltage must always be greater than grid-No. 3 voltage. For minimum "porthole" effect, grid-No. 4 voltage should be adjusted to approximately 1.6 times the grid-No. 3 voltage value, and the focusing-alignment assembly and deflecting yoke positioned as shown in accompanying diagram.

^h Beam focus is obtained by the combined effect of grid-No. 3 voltage, which should be adjustable over indicated range, and a focusing coil having an average field strength of 46 gauss.

^j With no blanking voltage on grid No. 1.

^k Defined as the per cent of initial value of signal-output current 1/20 second after illumination is removed. Values shown are for initial signal-output current of 0.2 microampere and a dark current of 0.02 microampere.

^m The alignment coil should be located on the tube so that its center is at a distance of 6 inches from the face of the tube, and be positioned so that its axis is coincident with the axis of the tube, the deflecting yoke, and the focusing coil.

ⁿ Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.

^p The target voltage for each 8051 must be adjusted to that value which gives the desired operating dark current.

^q The deflecting circuits must provide extremely linear scanning for good black-level reproduction. Dark-current signal is proportional to the scanning velocity. Any change in scanning velocity produces a black-level error in direct proportion to the change in scanning velocity.

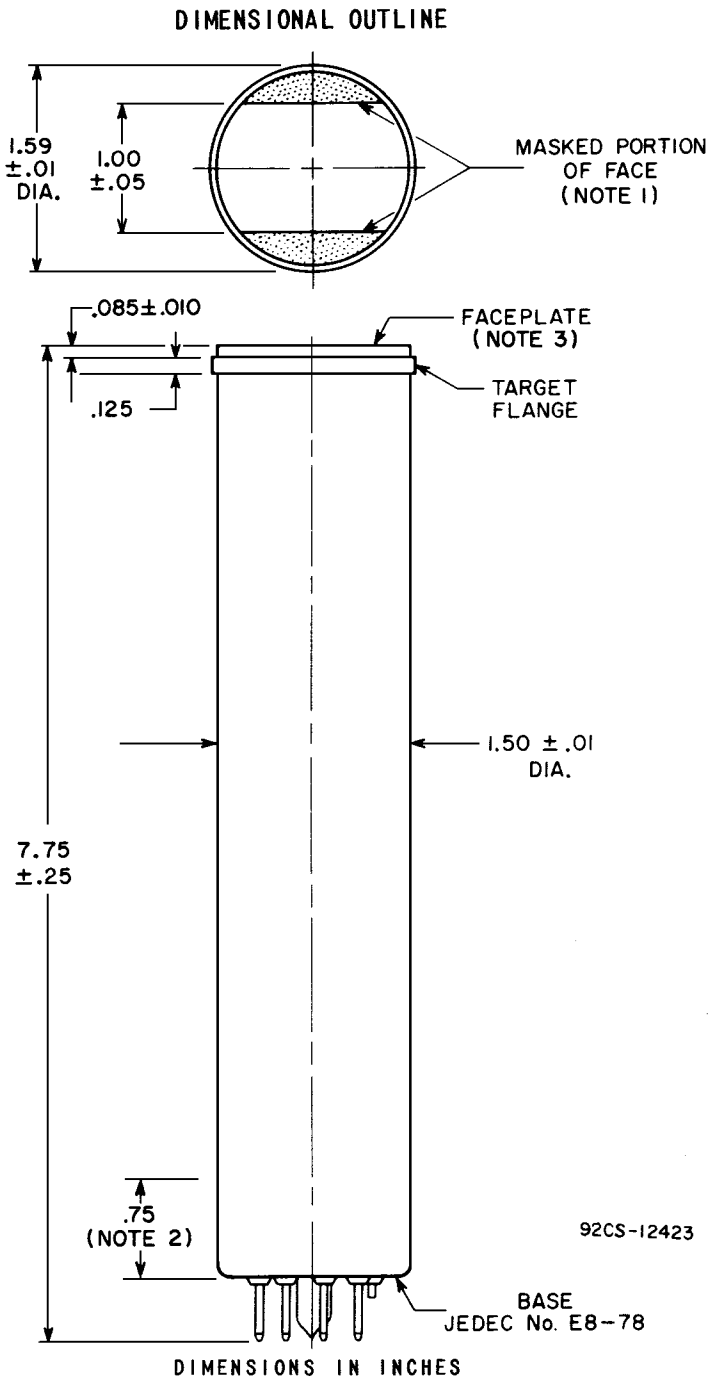
^r Defined as the component of the highlight target current after the dark-current component has been subtracted.

OPERATING CONSIDERATIONS

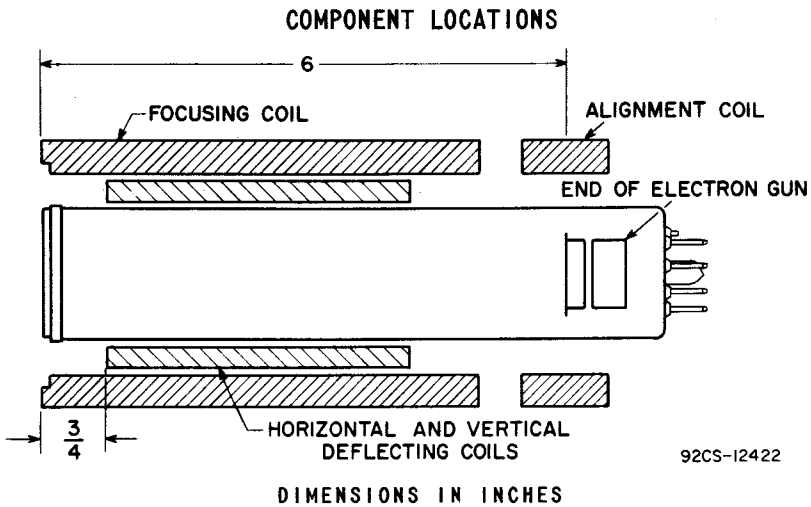
The *target connection* is made by a suitable spring contact bearing against the edge of the metal ring at the face end of the tube.

**SPECTRAL-SENSITIVITY CHARACTERISTIC
OF PHOTSENSITIVE DEVICE HAVING S-18 RESPONSE
is shown at front of this section**

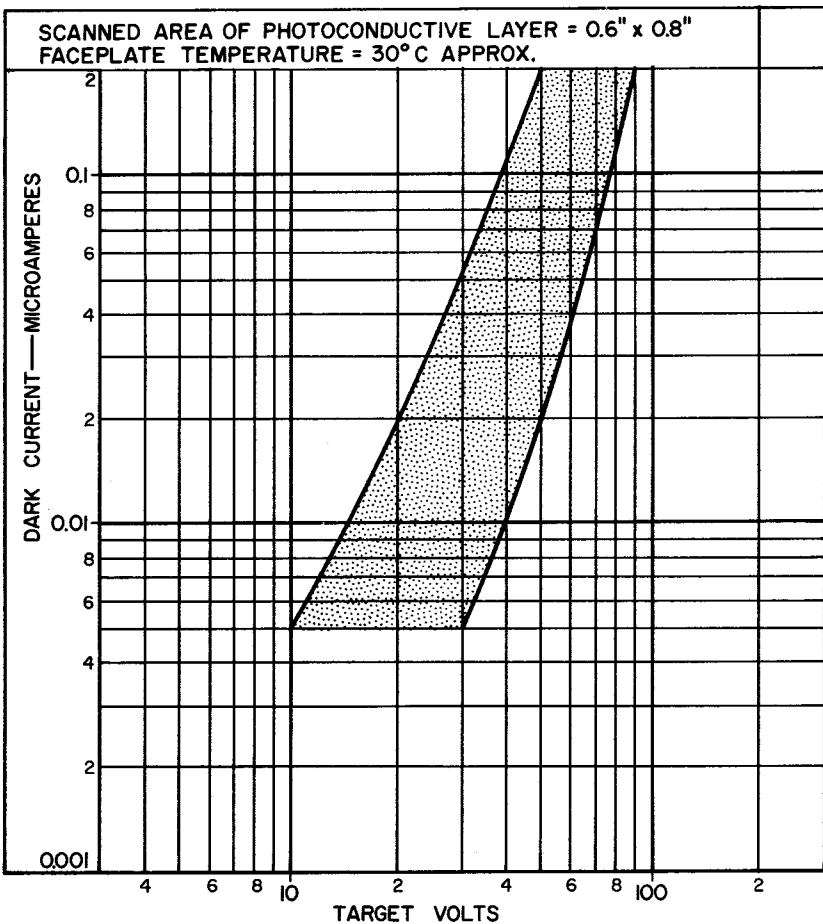




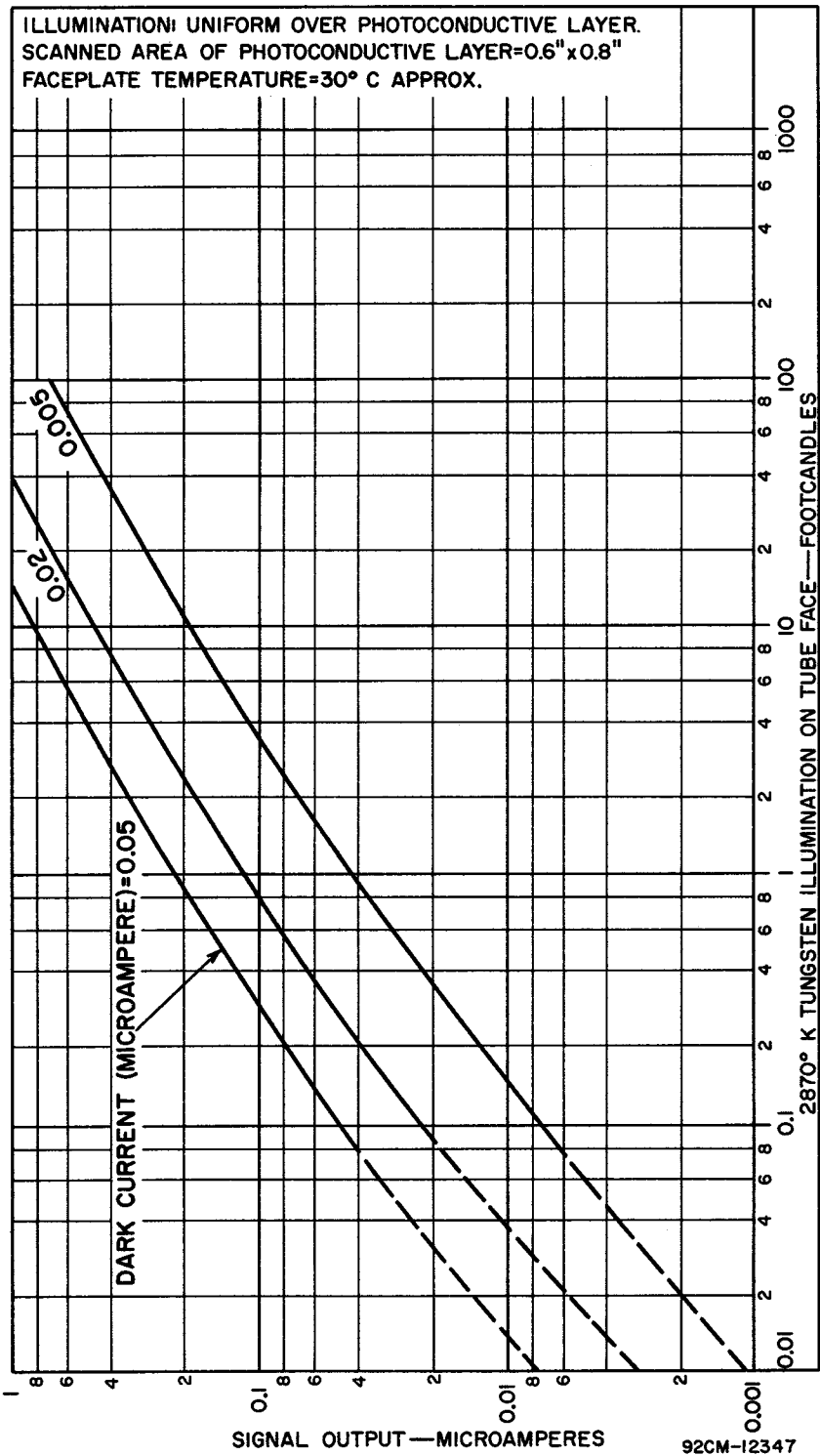
- Note 1:** Straight sides of masked portions are parallel to the plane passing through tube axis and short index pin.
- Note 2:** Within this area the minimum bulb diameter dimension does not apply.
- Note 3:** Faceplate thickness is $0.135" \pm 0.005"$.



RANGE OF DARK CURRENT

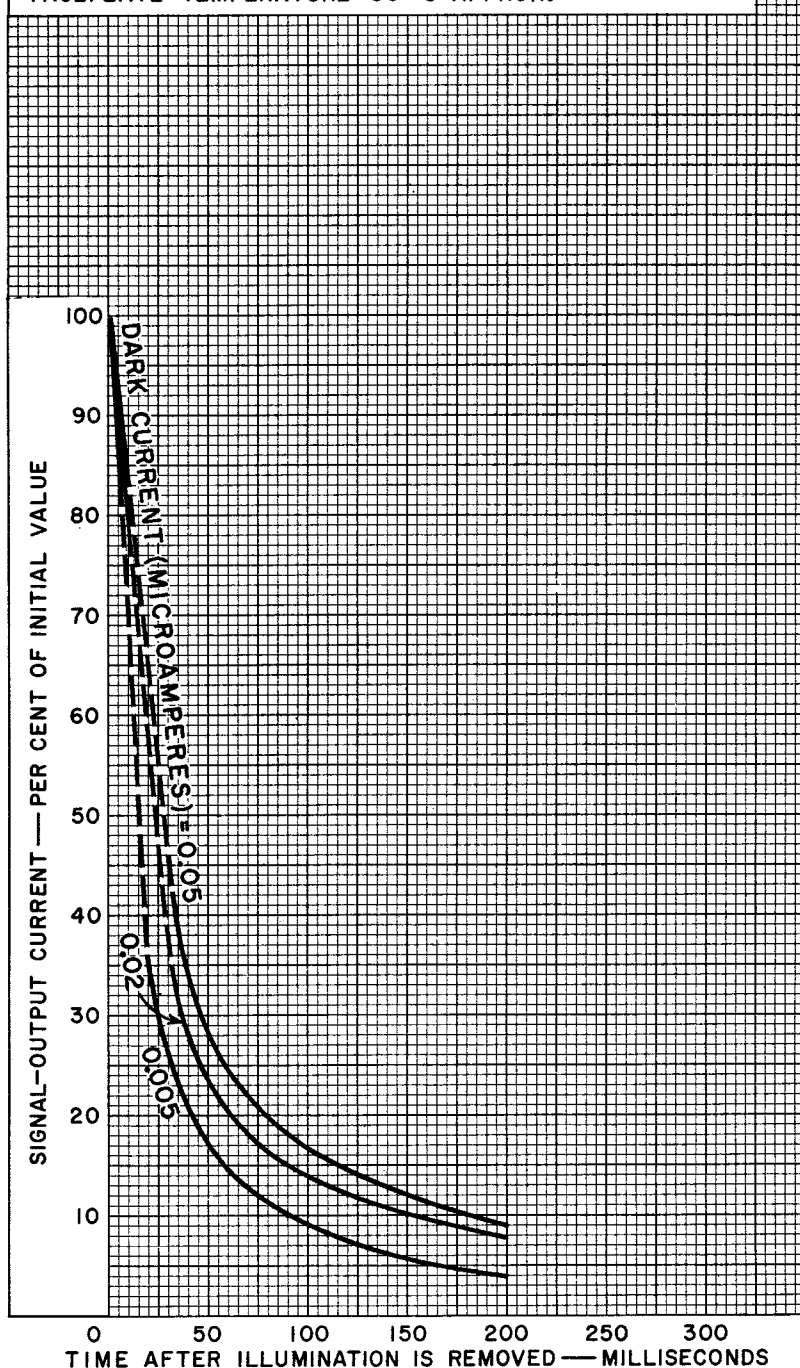


LIGHT TRANSFER CHARACTERISTICS



TYPICAL PERSISTENCE CHARACTERISTICS

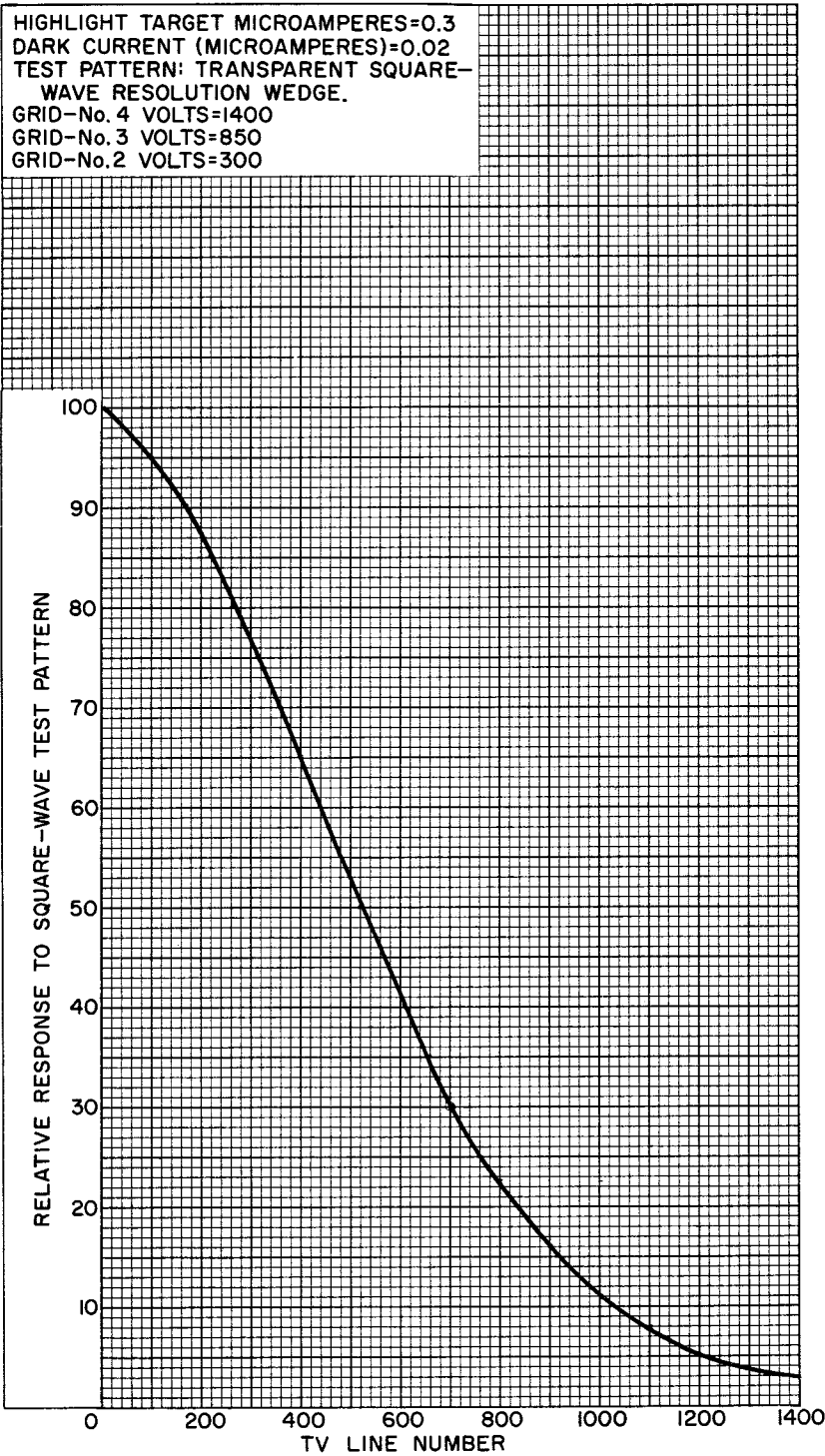
INITIAL HIGHLIGHT SIGNAL-OUTPUT MICROAMPERES=0.2
 SCANNED AREA OF PHOTOCONDUCTIVE LAYER=0.6" X 0.8"
 FACEPLATE TEMPERATURE=30° C APPROX.



92CM-III53RI



UNCOMPENSATED HORIZONTAL RESPONSE
TO A SQUARE-WAVE TEST PATTERN



92CM-12418R1

