

Vidicon

LOW-POWER (0.6-WATT) HEATER 600-TO-900-LINE RESOLUTION

For Use Under Severe Shock and Vibration, High
Humidity, and at Altitudes up to 50,000 Feet

DATA

General:

Heater, for Unipotential Cathode:

Voltage (AC or DC) $6.3 \pm 10\%$ volts
Current at 6.3 volts. 0.095 amp

Direct Interelectrode Capacitance:^a

Target to all other electrodes. 3 μf

Spectral Response See Curve

Photoconductive Layer:

Maximum useful diagonal of
rectangular image (4 x 3
aspect ratio) 0.62"

Orientation of quality rectangle—Proper orientation is
obtained when the horizontal scan is essentially parallel to
the plane passing through the tube axis and short index pin.

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length. 5.154" $\pm$ 0.06"

Greatest Diameter (Excluding target-flange
contact). 1.125" $\pm$ 0.010"

Weight (Approx.). 2 oz

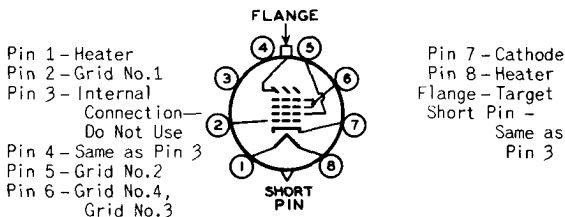
Operating Position. Any

Bulb. T8

Socket. Cinch No. 54A18088^b, or equivalent

Base. Small-Button Ditetra 8-Pin (JEDEC No. E8-11)

Basing Designation for BOTTOM VIEW. 8HM



DIRECTION OF LIGHT:
INTO FACE END OF TUBE

Maximum Ratings, Absolute-Maximum Values:

For altitudes up to 50,000 feet
and scanned area of 1/2" x 3/8"

GRID-No.3 & GRID-No.4 VOLTAGE. 750 max. volts
GRID-No.2 VOLTAGE. 750 max. volts



GRID-No.1 VOLTAGE:

Negative-bias value.	300 max.	volts
Positive-bias value.	0 max.	volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	125 max.	volts
Heater positive with respect to cathode.	10 max.	volts

TARGET VOLTAGE 100 max. volts

DARK CURRENT 0.25 max. μ a

PEAK TARGET CURRENT^c 0.55 max. μ a

FACEPLATE:

Illumination	1000 max.	fc
Temperature.	71 max.	°C

Typical Operation:

*For scanned area of 1/2" x 3/8" and
faceplate temperature of 30° to 35° C*

Grid-No.4 (Decelerator) & Grid-No.3

(Beam-Focus-Electrode^d) Voltage. 250^e to 300 volts

Grid-No.2 (Accelerator) Voltage. 300 volts

Grid-No.1 Voltage for picture cutoff^f. -45 to -100 volts

Average "Gamma" of Transfer Characteristic

for signal-output current between
0.02 μ a and 0.2 μ a 0.57

Visual Equivalent Signal-to-Noise

Ratio (Approx.)^g 300:1

Lag (Per cent of initial value of signal-
output current 1/20 second after
illumination is removed) for initial
signal-output current of 0.2 μ a, dark
current of 0.02 μ a:

Typical.	15	%
Maximum.	20	%

Minimum Peak-to-Peak Blanking Voltage:

When applied to grid No.1.	75	volts
When applied to cathode.	20	volts

Field Strength at center of focusing

coil (Approx.) 40 gauss

Field Strength of Adjustable

Alignment Coil^h. 0 to 4 gauss

Maximum-sensitivity operation—0.1 footcandle on faceplate

Faceplate Illumination (Highlight) 0.1 fc

Target Voltage^{j, k}. 35 to 70 volts

Dark Current^m. 0.2 μ a

Signal-Output Current:ⁿ

Typical. 0.14 μ a

Intermediate-sensitivity operation—0.5 footcandle on faceplate

Faceplate Illumination (Highlight) 0.5 fc

Target Voltage^{j, k}. 30 to 60 volts

Dark Current^m. 0.1 μ a

Signal-Output Current:ⁿ

Typical. 0.27 μ a



Average-sensitivity operation—1 footcandle on faceplate

Faceplate illumination (Highlight)	1	fc
Target Voltage ^k	20 to 40	volts
Dark Current ^m	0.02	μ a
Signal-Output Current: ⁿ		
Typical	0.2	μ a
Minimum	0.15	μ a

^a This capacitance, which effectively is the output impedance of the 2048A, is increased when the tube is mounted in the deflecting-yoke and focusing-coil assembly. The resistive component of the output impedance is in order of 100 megohms.

^b Cinch Manufacturing Corporation, 1026 South Homan Avenue, Chicago 24, Illinois.

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

^d Beam focus is obtained by combined effect of grid-No.3 voltage which should be adjustable over indicated range, and a focusing coil having and average field strength of 40 gaussess.

^e Definition, focus uniformity, and picture quality decrease with decreasing grid-No.4 and grid-No.3 voltage. In general, grid No.4 and grid No.3 should be operated above 250 volts.

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

^g Measured with high-gain, low-noise, cascade-input-type amplifier having bandwidth of 5 Mc and a peak signal-output current of 0.35 microampere. Because the noise in such a system is predominately of the high-frequency type, the visual equivalent signal-to-noise ratio is taken as the ratio of the highlight video-signal current to rms noise current, multiplied by a factor of 3.

^h The alignment coil should be located on the tube so that its center is at a distance of 3-11/16 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.

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

^k The target voltage for each 2048A must be adjusted to that value which gives the desired operating dark current.

^m 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.

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

SPECIAL PERFORMANCE DATA

In connection with the following tests, sample 2048A's will maintain resolution as determined with a RETMA Resolution Chart, or equivalent.

Vibration Tests:

These tests are performed under conditions for *Average-Sensitivity Operation* on a sample lot of tubes from each production run. Tubes and their associated components^p are vibrated on apparatus providing dynamic conditions similar to those described in MIL-E-5272B^r, paragraph 4.7.1.

Resonance. Tubes and associated components^p are vibrated (per the method of MIL-E-5272B^r, paragraph 4.7.1) for 1 hour at +25° C, for 15 minutes at 0° C, and for 15 minutes at +55° C.

Cycling. Tubes and associated components^p are vibrated (per the method of MIL-E-5272B^r, paragraph 4.7.1.2 pertaining



2048A

to specimen without vibration isolators) for 1 hour at $+25^{\circ}\text{C}$, for 15 minutes at 0°C , and for 15 minutes at $+55^{\circ}\text{C}$.

Temperature-Pressure (Altitude) Tests:

Tubes and associated components^p are subjected (per the method of MIL-E-5400^s, paragraph 3.2.20, 3.2.20.1, and 3.2.20.1.1) to the separate and combined effects of varying temperature 0° to $+55^{\circ}\text{C}$ and varying barometric pressure 30 to 3.4 inches of mercury. The pressures correspond to sea level and to an altitude of 50,000 feet, respectively.

Shock Tests:

These tests are performed with no voltages applied and on a sample lot of tubes from each production run. Tubes and their associated components^p are subjected in these tests (per MIL-E-5400^s, paragraph 3.2.21.2.1) to 18 impact shocks of 15 g consisting of 3 shocks in opposite directions along each of three mutually perpendicular axes of the tube. Each shock impulse has a duration of 11 ± 1 milliseconds with a maximum impact acceleration occurring at approximately 5.5 milliseconds. Tube mounting accessories assure the rigid fastening of the tube to the shock-test apparatus.

Temperature-Humidity Tests:

These tests are performed with no voltages applied to the 2048A. The 2048A and associated components^p are subjected (per the method of MIL-E-5400^s, paragraph 3.2.20.2B) to relative humidities up to and including 95 per cent at temperatures up to and including $+50^{\circ}\text{C}$.

^p Tube socket such as Cinch No. 54A18088 and RCA Assembly No. 8447880, or equivalent, which consists of the deflecting coils, focusing coil, alignment coil, shield, and target connector. This assembly is available from RCA Defense Electronic Products, Equipment Maintenance and Support, Building 7-5, Camden, New Jersey.

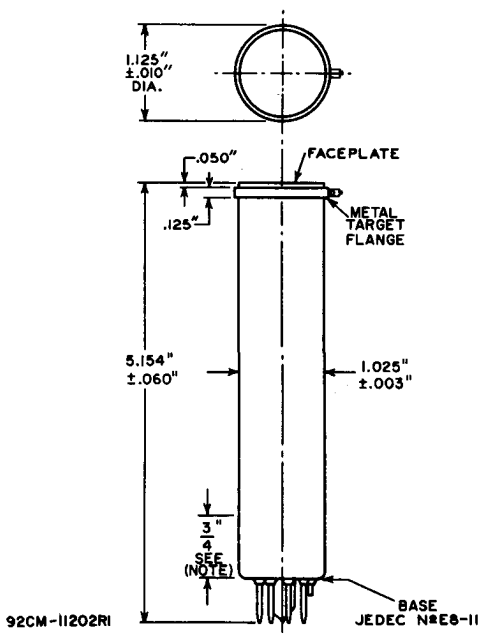
^r 5 June 1957, Procedure I of Military Specifications.

^s 1 January 1956.

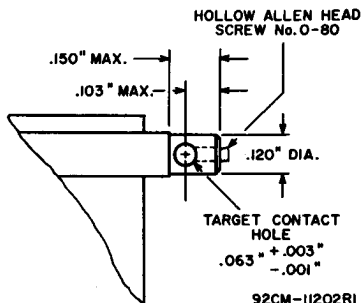
OPERATING CONSIDERATIONS

Support for the 2048A should be provided such that, under vibration and shock, the tube will not be displaced with respect to the focusing, deflecting, and alignment fields. Suitable support is provided for the tube and its socket in the RCA Deflection Assembly 8447880, or equivalent. Orientation of the 2048A in its support should be such that the horizontal scan is essentially parallel to the plane passing through the tube axis and short index pin.



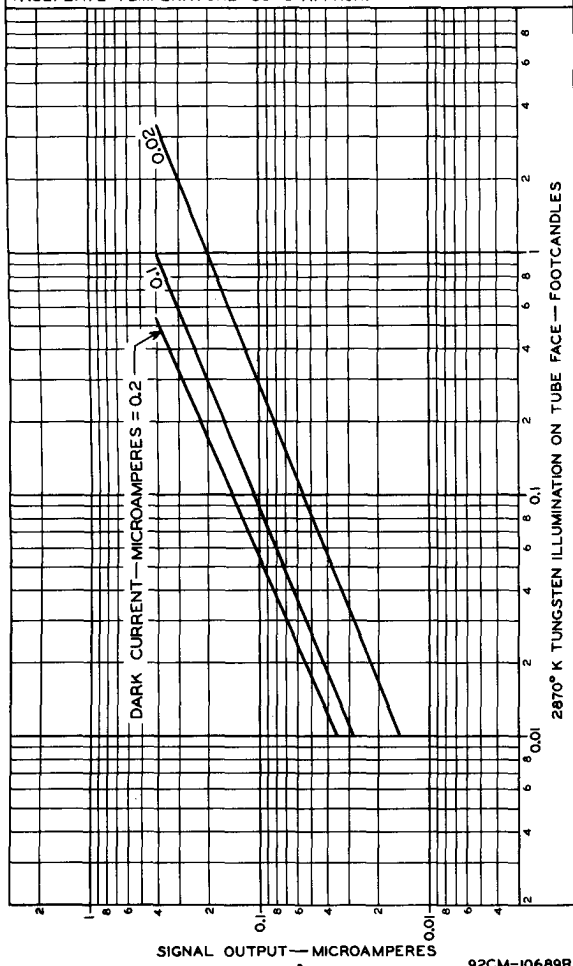


DETAIL OF TARGET-FLANGE CONTACT



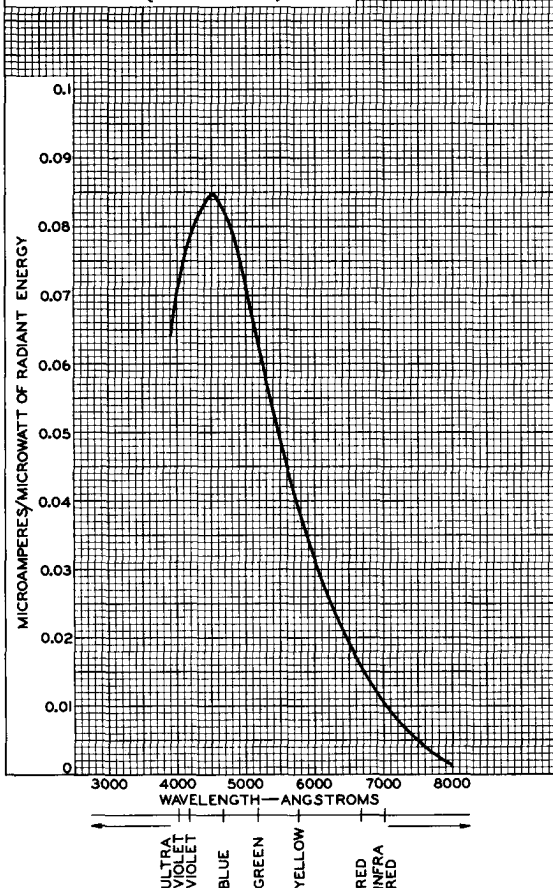
TYPICAL LIGHT-TRANSFER CHARACTERISTICS

ILLUMINATION: UNIFORM OVER PHOTOCONDUCTIVE LAYER.
 SCANNED AREA OF PHOTOCONDUCTIVE LAYER = $\frac{1}{2} \times \frac{3}{8}$ "
 FACEPLATE TEMPERATURE = 30° C APPROX.



TYPICAL SPECTRAL-SENSITIVITY CHARACTERISTIC

FOR EQUAL VALUES OF SIGNAL-OUTPUT
CURRENT AT ALL WAVELENGTHS.
SIGNAL-OUTPUT MICROAMPERES FROM
SCANNED AREA OF $\frac{1}{2} \times \frac{3}{8} = 0.02$
DARK CURRENT (MICROAMPERES) = 0.02



92CM-10698R1



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

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