



6474

6474/1854

IMAGE ORTHICON

FOR SIMULTANEOUS COLOR PICKUP

MAGNETIC FOCUS

MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage $6.3 \pm 10\%$ ac or dc volts

Current 0.6 ampere

Direct Interelectrode Capacitance:

Anode to all other electrodes 20 μf

Photocathode, Semitransparent:

Response See accompanying Spectral Sensitivity curve

Rectangular image (4 x 3 aspect ratio):

Useful size of 1.6" max. Diagonal

Orientation of Proper orientation is obtained when the vertical scan is essentially parallel to the plane passing through center of faceplate and pin No.7 of the shoulder base.

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length $15\text{--}3/16" \pm 1/4"$ Greatest Diameter of Bulb $3" \pm 1/16"$ Minimum Deflecting-Coil Inside Diameter $2\text{--}3/8"$

Deflecting-Coil Length 5"

Focusing-Coil Length 10"

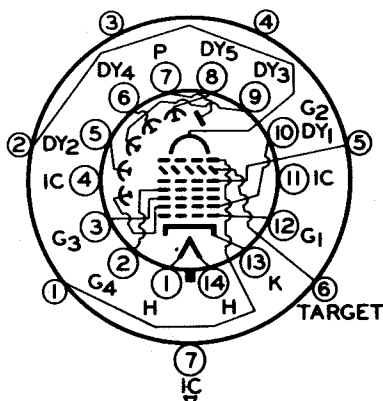
Alignment-Coil Length $15/16"$ Photocathode Distance Inside End of Focusing Coil $1/2"$ Operating Position: Any except with diheptal base up and tube axis at angle of less than 20° from vertical

Weight (Approx.) 1 lb 6 oz

End Base Small-Shell Diheptal 14-Pin Base (JETEC No.B14-45)

BOTTOM VIEW

- Pin 1-Heater
 Pin 2-Grid No.4
 Pin 3-Grid No.3
 Pin 4-Internal Connection-Do Not Use
 Pin 5-Dynode No.2
 Pin 6-Dynode No.4
 Pin 7-Anode
 Pin 8-Dynode No.5
 Pin 9-Dynode No.3
 Pin 10-Dynode No.1, Grid No.2
 Pin 11-Internal Connection-Do Not Use
 Pin 12-Grid No.1
 Pin 13-Cathode
 Pin 14-Heater

DIRECTION OF LIGHT:
PERPENDICULAR TO
LARGE END OF TUBEWHITE INDEX LINE
ON FACE

(Continued on next page)

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



IMAGE ORTHICON

Shoulder Base	Keyed Jumbo Annular 7-Pin
Pin 1—Grid No.6	Pin 5—Grid No.5
Pin 2—Photocathode	
Pin 3—Internal Connection—Do Not Use	Pin 6—Target
Pin 4—Internal Connection—Do Not Use	Pin 7—Internal Connection—Do Not Use

Maximum Ratings, Absolute Values:

PHOTOCATHODE:		
Voltage	-550 max.	volts
Illumination	50 max.	ft-c
OPERATING TEMPERATURE:		
Of any part of bulb	50 max.	°C
Of bulb at large end of tube (target section)	35 min.	°C
TEMPERATURE DIFFERENCE:		
Between target section and any part of bulb hotter than target section	5 max.	°C
GRID-No.6 VOLTAGE	-550 max.	volts
TARGET VOLTAGE:		
Positive value	10 max.	volts
Negative value	10 max.	volts
GRID-No.5 VOLTAGE	150 max.	volts
GRID-No.4 VOLTAGE	300 max.	volts
GRID-No.3 VOLTAGE	400 max.	volts
GRID-No.2 & DYNODE-No.1 VOLTAGE	350 max.	volts
GRID-No.1 VOLTAGE:		
Negative bias value	125 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
ANODE-SUPPLY VOLTAGE*	1350 max.	volts
VOLTAGE PER MULTIPLIER STAGE	350 max.	volts

Typical Operation and Characteristics:

Photocathode Voltage (Image Focus)	-300 to -500	volts
Grid-No.6 Voltage (Accelerator)— 75% of photocathode voltage	-225 to -375	volts
Target Voltage ^o	0 to 3	volts
Grid-No.5 Voltage (Decelerator)	0 to 125	volts
Grid-No.4 Voltage (Beam Focus)	160 to 220	volts
Grid-No.3 Voltage [#]	225 to 330	volts
Grid-No.2 & Dynode-No.1 Voltage	300	volts
Grid-No.1 Voltage for Picture Cutoff	-45 to -115	volts

* Ratio of dynode voltages is shown under *Typical Operation*.

^o Adjustable from -3 to +5 volts with blanking voltage off.

[#] Adjust to give the most uniformly shaded picture near maximum signal.



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IMAGE ORTHICON

Dynode-No.2 Voltage	600	volts
Dynode-No.3 Voltage	800	volts
Dynode-No.4 Voltage	1000	volts
Dynode-No.5 Voltage	1200	volts
Anode Voltage	1250	volts
Anode Current (DC)	30	μ amp
Signal-Output Current (Peak to peak) . .	3 to 20	μ amp
Target Temperature Range	35 to 45	$^{\circ}$ C
Ratio of Peak-to-Peak Highlight Video-Signal Current to RMS Noise Current (Approx.)	60	
Minimum Peak-to-Peak Blanking Voltage . .	5	volts
Field Strength at Center of Focusing Coil [▲]	75	gausses
Field Strength of Alignment Coil (Approx.)	0 to 3	gausses

[▲] Direction of current should be such that a north-seeking pole is attracted to the image end of the focusing coil, with the indicator located outside of and at the image end of the focusing coil.

OPERATING CONSIDERATIONS

When the equipment design or operating conditions are such that the *maximum temperature rating* or *maximum temperature difference* as given under *Maximum Ratings* will be exceeded, provision should be made to direct a blast of cooling air from the diheptal-base end of the tube along the entire length of the bulb surface, i.e., through the space between the bulb surface and the surrounding deflecting-coil assembly and its extension. Any attempt to effect cooling of the tube by circulating even a large amount of air around the focusing coil will do little good, but a small amount of air directly in contact with the bulb surface will effectively drop the bulb temperature. For this purpose, a small blower is satisfactory, but it should be run at low speed to prevent vibration of the 6474 and the associated amplifier equipment. Unless vibration is prevented, distortion of the picture may occur.

To keep the operating temperature of the large end of the tube from falling below 35° C, some form of controlled heating should be employed. Ordinarily, adequate heat will be supplied by the focusing coil, deflecting coils, and associated amplifier tubes so that the temperature can be controlled by the amount of cooling air directed along the bulb surface. If, in special cases, a target heater is required, it should fit between the focusing coil and the bulb near the shoulder of the tube, and be non-inductively wound.

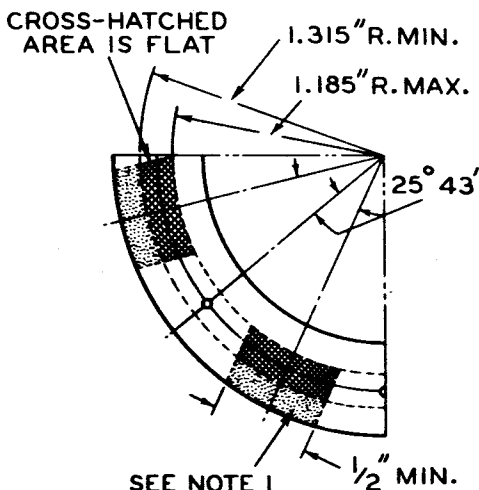
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IMAGE ORTHICON

DETAIL OF BOTTOM VIEW
OF JUMBO ANNULAR BASE

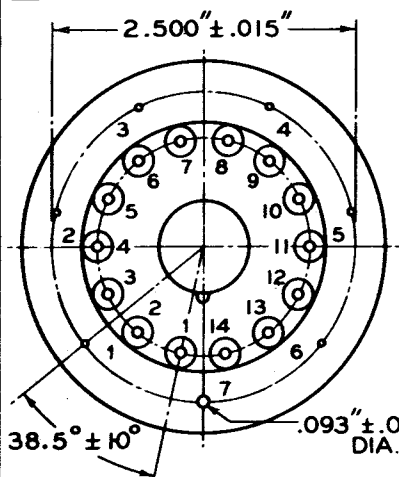
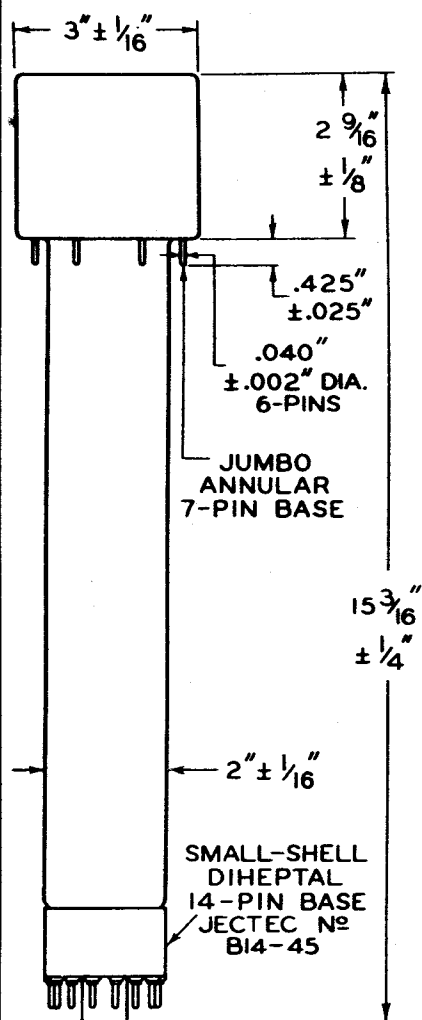


NOTE 1: DOTTED AREA IS FLAT OR EXTENDS TOWARD DIHEPTAL-BASE END OF TUBE BY 0.060" MAX.

ANNULAR BASE GAUGE

ANGULAR VARIATIONS BETWEEN PINS AS WELL AS ECCENTRICITY OF NECK CYLINDER WITH RESPECT TO PHOTOCATHODE CYLINDER ARE HELD TO TOLERANCES SUCH THAT PINS AND NECK CYLINDER WILL FIT FLAT-PLATE GAUGE WITH:

- SIX HOLES HAVING DIAMETER OF $0.065" \pm 0.001"$ AND ONE HOLE HAVING DIAMETER OF $0.150" \pm 0.001"$. ALL HOLES HAVE DEPTH OF $0.265" \pm 0.001"$. THE SIX $0.065"$ HOLES ARE ENLARGED BY 45° TAPER TO DEPTH OF $0.047"$. ALL HOLES ARE SPACED AT ANGLES OF $51^\circ 26' \pm 5'$ ON CIRCLE DIAMETER OF $2.500" \pm 0.015"$.
- SIX STOPS HAVING HEIGHT OF $0.187" \pm 0.001"$, CENTERED BETWEEN PIN HOLES, TO BEAR AGAINST FLAT AREAS OF BASE.
- RIM EXTENDING OUT A MINIMUM OF $1/8"$ FROM $2-13/16"$ DIAMETER AND HAVING HEIGHT OF $0.126" \pm 0.001"$.
- NECK-CYLINDER CLEARANCE HOLE HAVING DIAMETER OF $2.200" \pm 0.001"$.



ENLARGED BOTTOM VIEW

92CM-8293

JUNE 14, 1954

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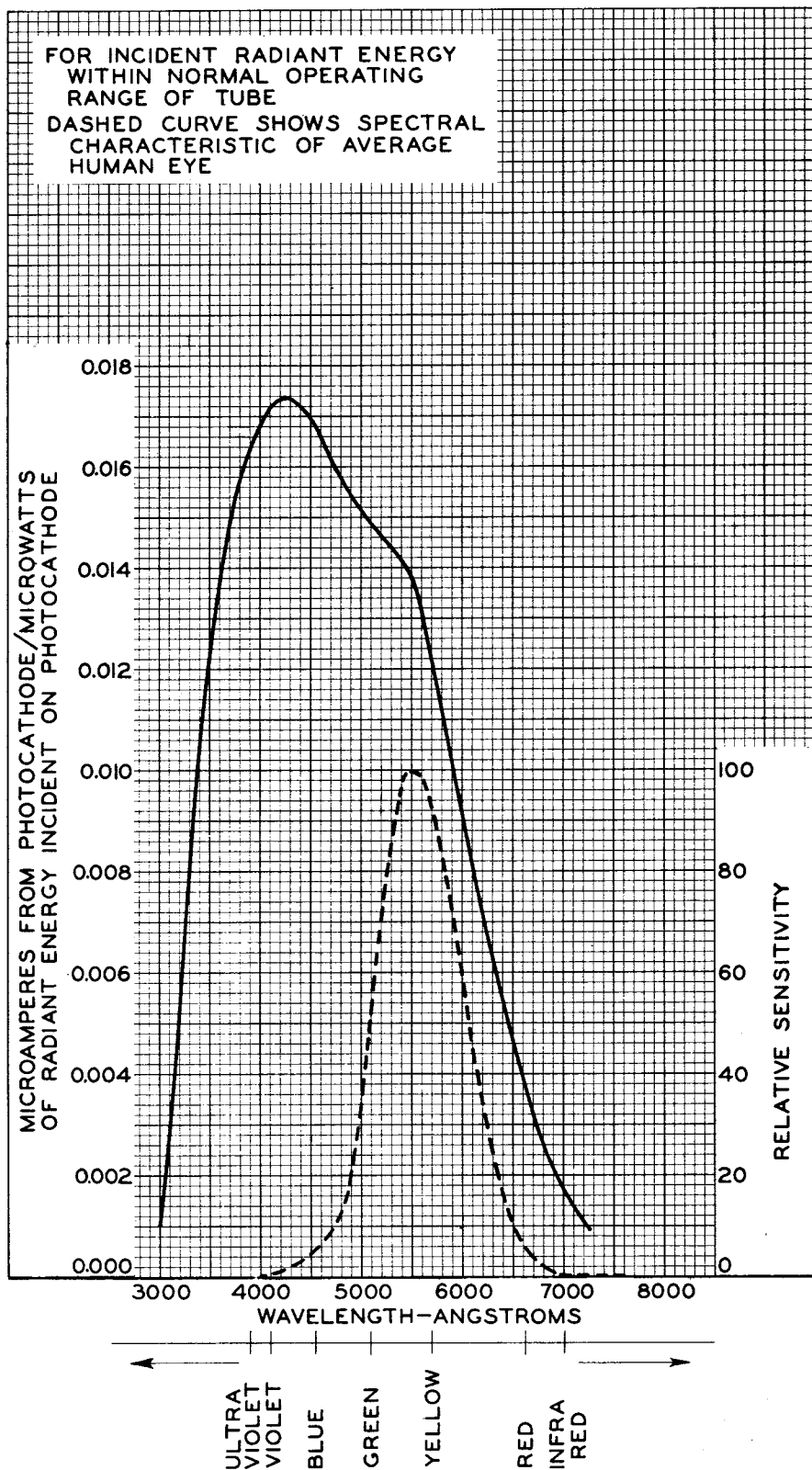
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SPECTRAL SENSITIVITY CHARACTERISTIC

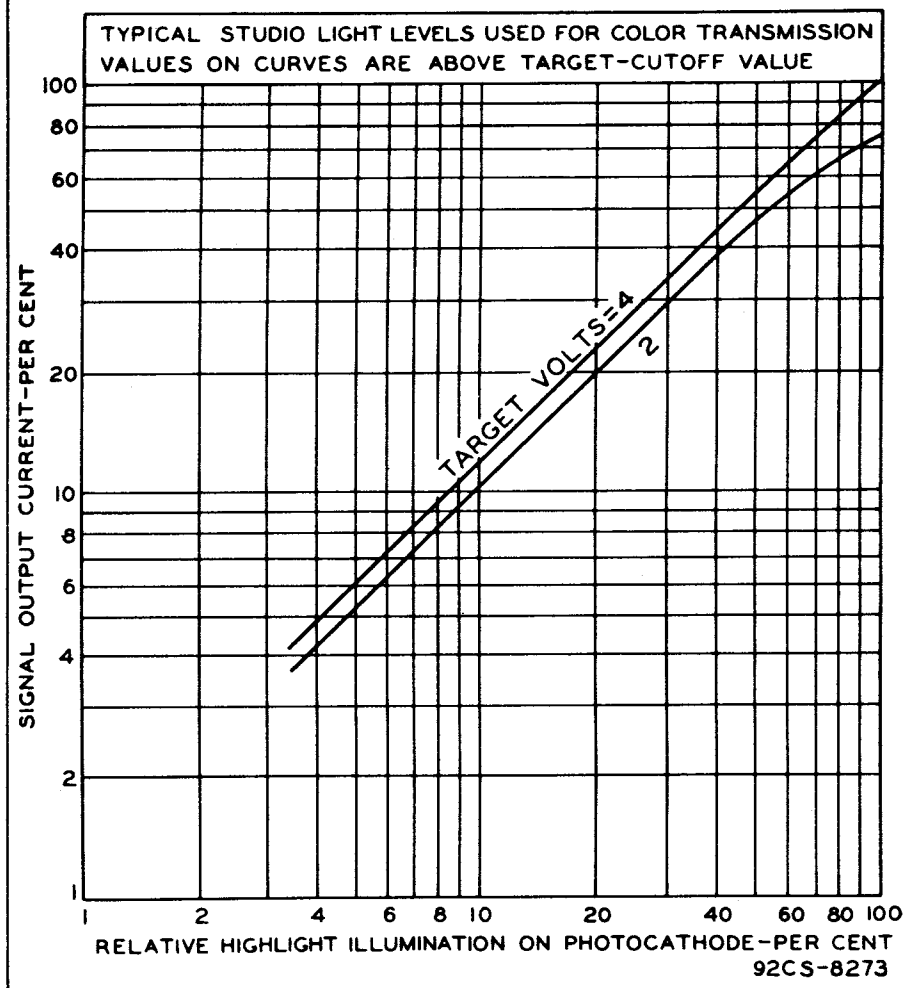
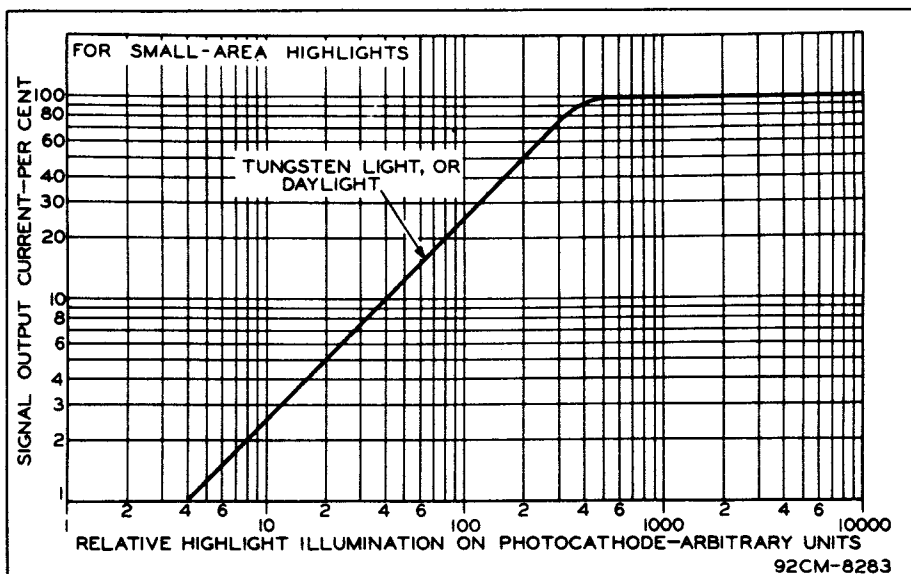


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LIGHT TRANSFER CHARACTERISTICS



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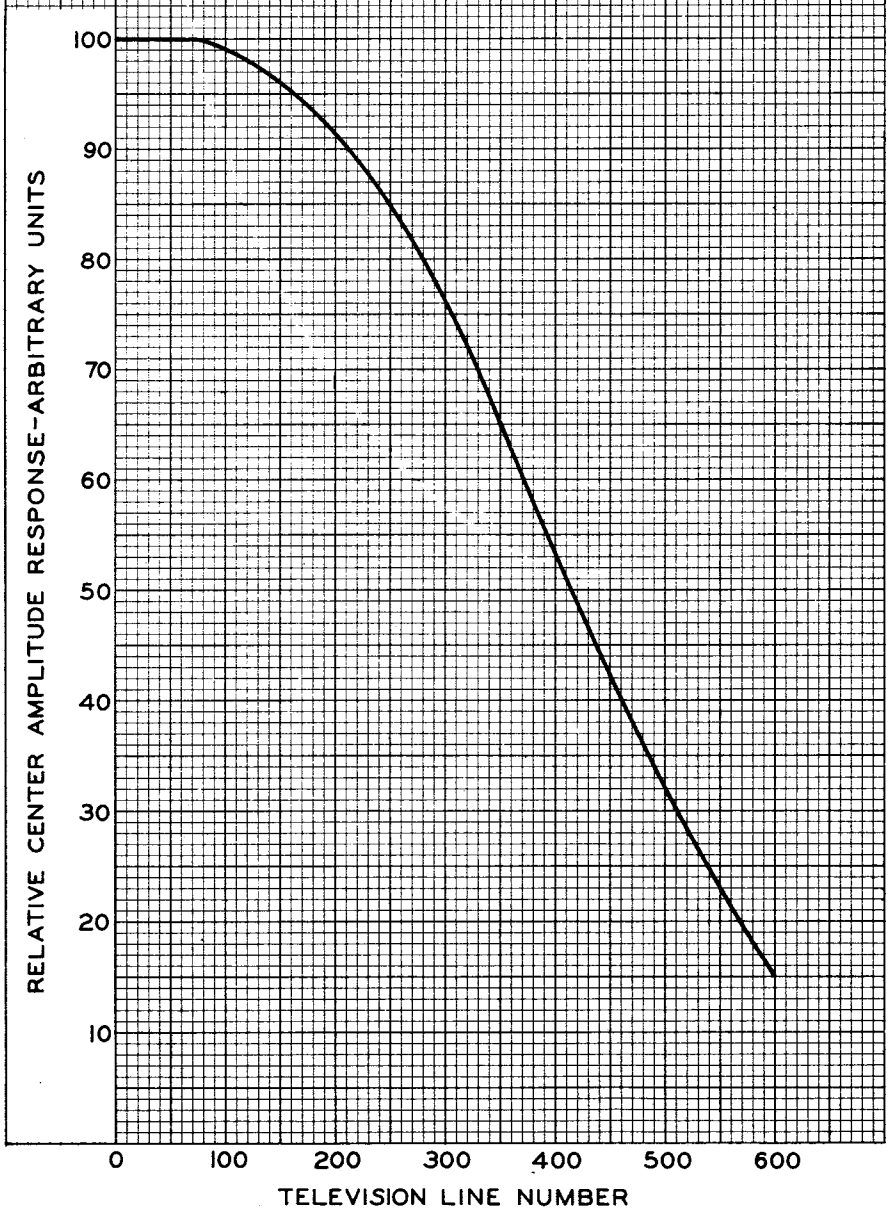


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AMPLITUDE RESPONSE CHARACTERISTIC

TEST PATTERN: SQUARE WAVE
OPERATING TEMPERATURE OF BULB
ADJACENT TO TARGET: 35°C
RESPONSE MEASURED IN CHANNEL
HAVING 10-Mc BANDWIDTH



MAR. 15, 1954

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92CM-8271

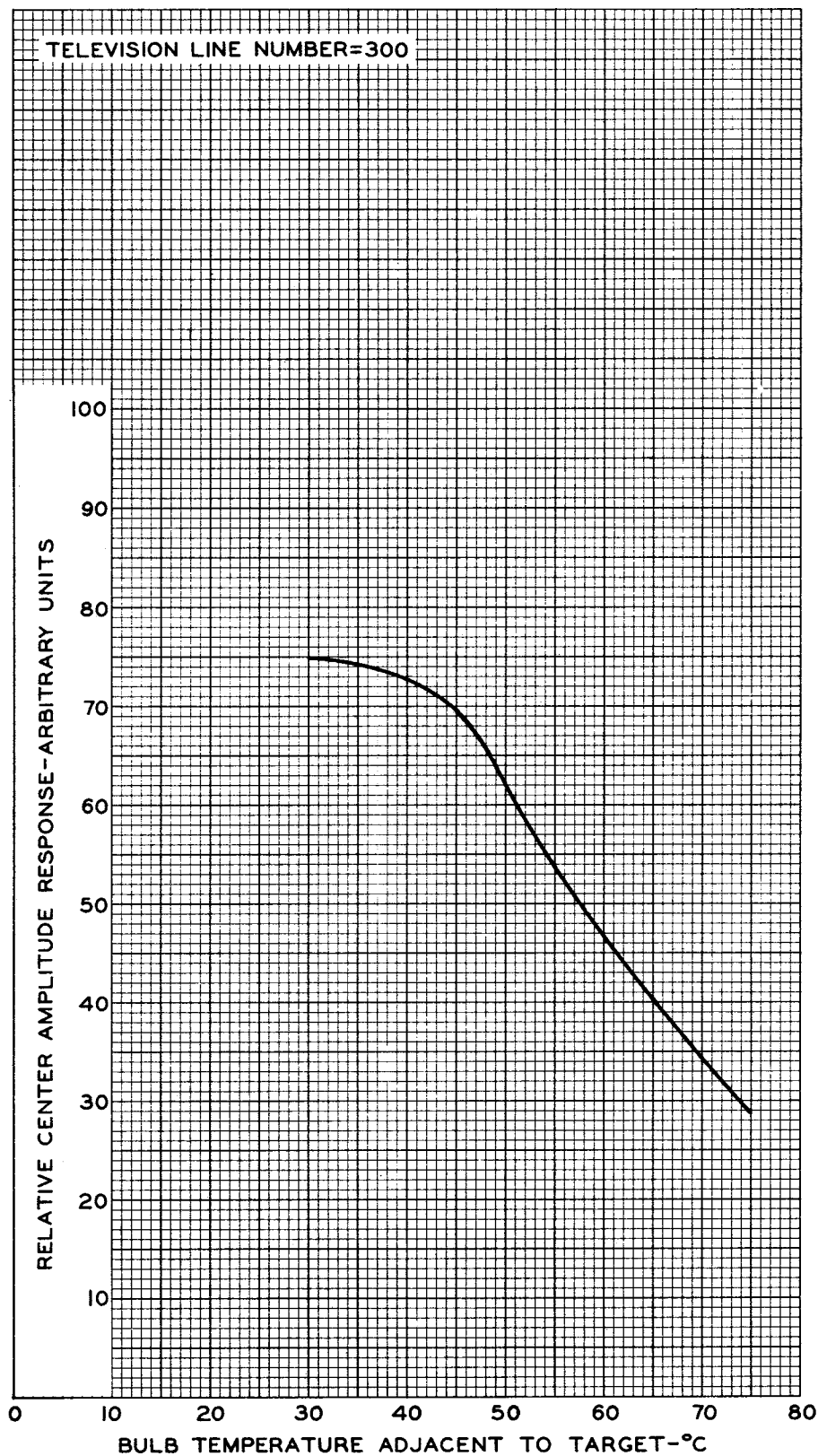
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TEMPERATURE EFFECT ON AMPLITUDE RESPONSE



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