

engineering data for



ULTRA-HIGH RESOLUTION CATHODE RAY TUBES

2000 lines per inch resolution
short persistence phosphor
.. used for photographic recording and UHR
radar



The CBS-Hytron cathode ray tubes, primarily ultra-high resolution read out tubes or monitors, are designed for high precision display and photographic use. They are capable of resolving 2000 lines per inch. For a line scan of 4.5 inches in a 5 inch diameter tube, a total of 8000 lines can be achieved.

By the immersion electron optical design, the beam is controlled over its entire post-acceleration path. Moreover the half-deflection angle of 9.5° insures accurate deflection linearity with suitable yokes*. Defocusing at the edge of the usable screen is less than 2.5%, which is negligible, but may be corrected to near zero by simple dynamic focusing. It should be realized that some loss of resolution will occur at the extremes of deflection. This loss results from the geometry of a flat face plate and is held to less than 15%.

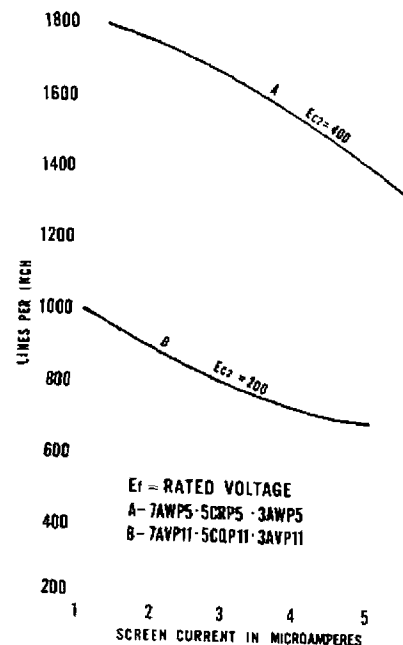
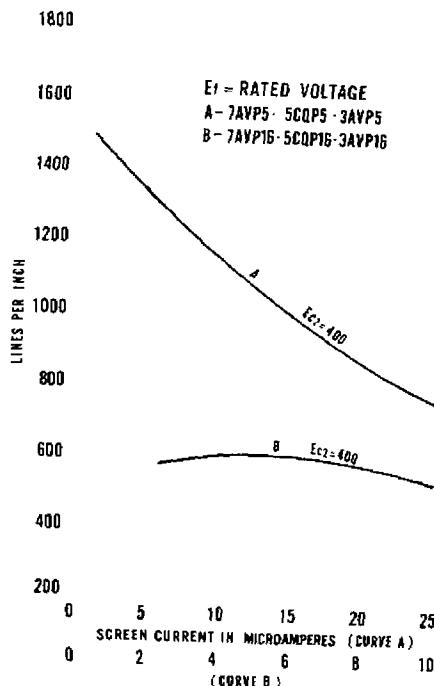
Tubes are available with P5 or P11 phosphor. These CR tubes are particularly suitable for photographic recording since the peak wavelengths of the phosphor fall within the blue region of the spectrum ($4300\text{\AA}$ and $4600\text{\AA}$ respectively).

Tubes are also available in P16 phosphor. P16 has a shorter persistence of 1 μs permitting use of these tubes in flying spot scanner work.

These ultra high resolution cathode ray tubes open up whole new fields of application in strip radar, photo reconnaissance, visual indication, photo reproduction, information transfer, industrial and medical closed-circuit TV, and remote data pick up.

*The magnetically shielded focus coil and deflection yokes, available from CBS-Hytron, have been designed for 1000 cps as well as the commercial TV scanning rate, are linear to within $\pm 2.5\%$, and are made for 20 Kv anode voltage.

RESOLUTION VERSUS SCREEN CURRENT



CBS-HYTRON, Danvers, Massachusetts
A Division of Columbia Broadcasting System, Inc.

from JEDEC release #2419, March 30, 1959



ULTRA-HIGH RESOLUTION CATHODE-RAY TUBES

TYPE	MECHANICAL DATA							OPTICAL DATA		ELECTRICAL DATA																	
	OVERALL LENGTH	GREATEST DIA. OF BULB	MIN. USEFUL (FACEPLATE SCREEN DIA. FLAT)	NECK LENGTH	BULB CONTACT † Recessed Small Cavity	BASE	BASING	PHOSPHOR NUMBER †	RESOLUTION TV LINES/INCH AT CENTER	FOCUSING METHOD	DEFLECTION ANGLE (APPROX.)	CAPACITANCES (APPROX.)		HEATER*		MAXIMUM RATINGS ABSOLUTE VALUES					TYPICAL OPERATION						
												G1 TO ALL ELECTRODES	FILAMENTARY CATHODE TO ALL ELECTRODES	HEATER VOLTS, A-C OR D-C	HEATER CURRENT, AMPERES	ANODE KV	GRID VOLTS, +BIAS	GRID VOLTS, -BIAS	GRID 2 VOLTS	CATHODE MA	ANODE KV	G1 BIAS VOLTS	G2 BIAS VOLTS	SCREEN μ A	SIGNAL GRID CUTOFF VOLTS	MAGNETIC FOCUS FIELD AMP. TURNS/CM	MAX. G1 CIRCUIT RESISTANCE (MEG Ω)
7AWP5	26.0" ± .5"	7.00" ± .13"	6.25"	6.13" ± .13"	J1-21	B5-57	12D	P-5	2,000	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-45	400	3.5	80-100	50	1.0
7AVP5	26.0" ± .5"	7.00" ± .13"	6.25"	6.13" ± .13"	J1-21	B5-57	12D	P-5	1,500	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	50	1.0
7AVP16	26.0" ± .5"	7.00" ± .13"	6.25"	6.13" ± .13"	J1-21	B5-57	12D	P-16	500	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	50	1.0
7AVP11	26.0" ± .5"	7.00" ± .13"	6.25"	6.13" ± .13"	J1-21	B5-57	12D	P-11	1,000	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-22	200	30	43-50	50	1.0
5CRP5	19.4" ± .5"	5.00" ± .13"	4.25"	5.76" ± .13"	J1-21	B5-57	12D	P-5	2,000	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-45	400	3.5	80-100	69	1.0
5CQP5	19.4" ± .5"	5.00" ± .13"	4.25"	5.76" ± .13"	J1-21	B5-57	12D	P-5	1,500	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	69	1.0
5CQP16	19.4" ± .5"	5.00" ± .13"	4.25"	5.76" ± .13"	J1-21	B5-57	12D	P-16	500	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	69	1.0
5CQP11	19.4" ± .5"	5.00" ± .13"	4.25"	5.76" ± .13"	J1-21	B5-57	12D	P-11	1,000	MAG	19°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-22	200	30	43-50	69	1.0
3AWP5	19.4" ± .5"	3.00" ± .13"	2.25"	5.74" ± .13"	J1-21	B5-57	12D	P-5	2,000	MAG	9.5°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-45	400	3.5	80-100	69	1.0
3AVP5	19.4" ± .5"	3.00" ± .13"	2.25"	5.74" ± .13"	J1-21	B5-57	12D	P-5	1,500	MAG	9.5°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	69	1.0
3AVP16	19.4" ± .5"	3.00" ± .13"	2.25"	5.74" ± .13"	J1-21	B5-57	12D	P-16	500	MAG	9.5°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-50	400	120	90-120	69	1.0
3AVP11	19.4" ± .5"	3.00" ± .13"	2.25"	5.74" ± .13"	J1-21	B5-57	12D	P-11	1,000	MAG	9.5°	7 μ uf MAX.	6 μ uf MAX.	6.3	.600 ± 10%	30	0	-300	+1000	1	20	-22	200	30	43-50	69	1.0

* PEAK HEATER — CATHODE VOLTAGE

HEATER NEGATIVE TO CATHODE

DURING WARM-UP PERIOD OF 15 SECONDS, MAX. 410 VOLTS

AFTER EQUIPMENT WARM-UP PERIOD 180 VOLTS

HEATER POSITIVE WITH RESPECT TO CATHODE 180 VOLTS

† Bulb contact alignment: Pin 3 ± 10 degrees.

‡ P5: Fluorescent and Phosphorescent color, blue; Persistence (approx.), 10-5 sec.

P11: Fluorescent and Phosphorescent color, blue; Persistence (approx.), 5 x 10-5 sec.

P16: Fluorescent and Phosphorescent color, near ultra violet; Persistence (approx.), 10-6 sec.

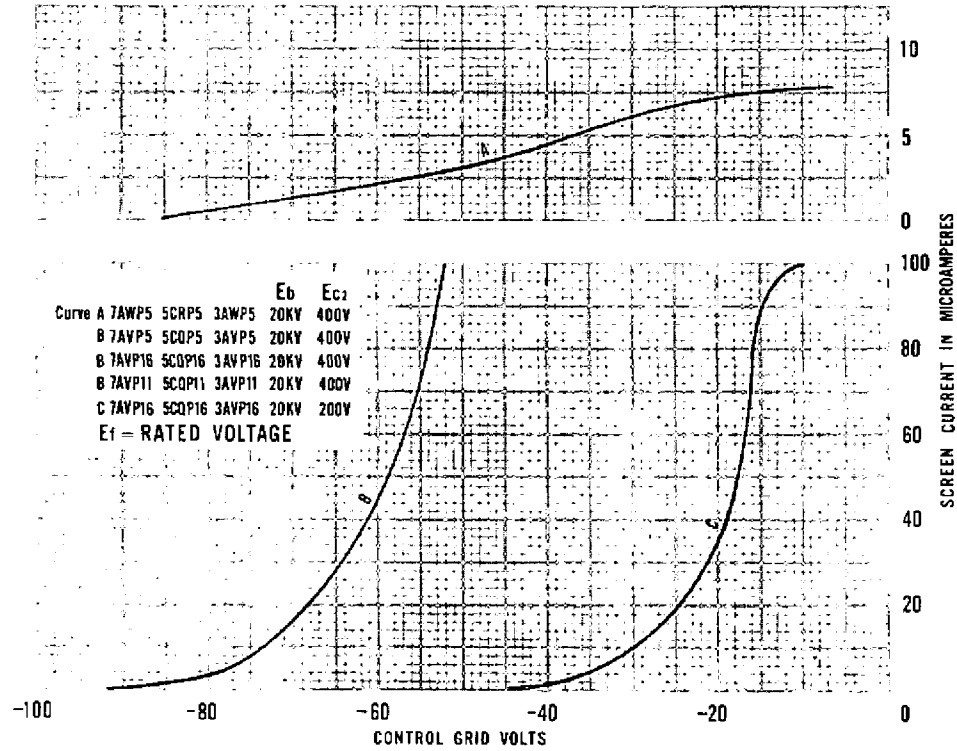
BRIGHTNESS:

Brightness measured according to MIL-E-10 Par. 4.12-5.2 using a 105 line pattern and a 2" x 2" raster with a Weston light meter corrected for eye sensitivity.

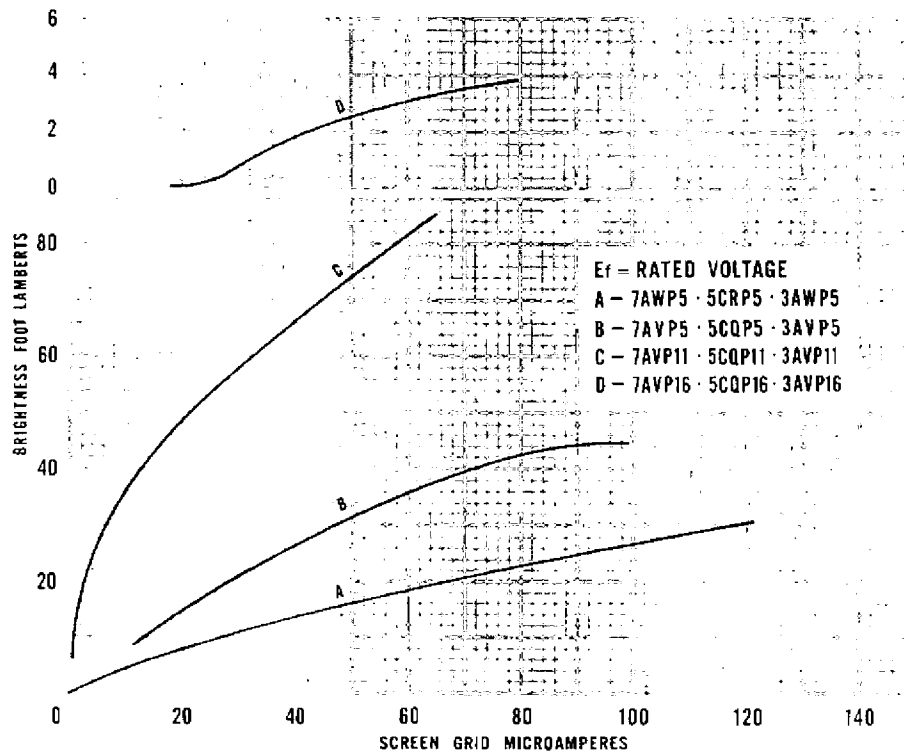
RESOLUTION:

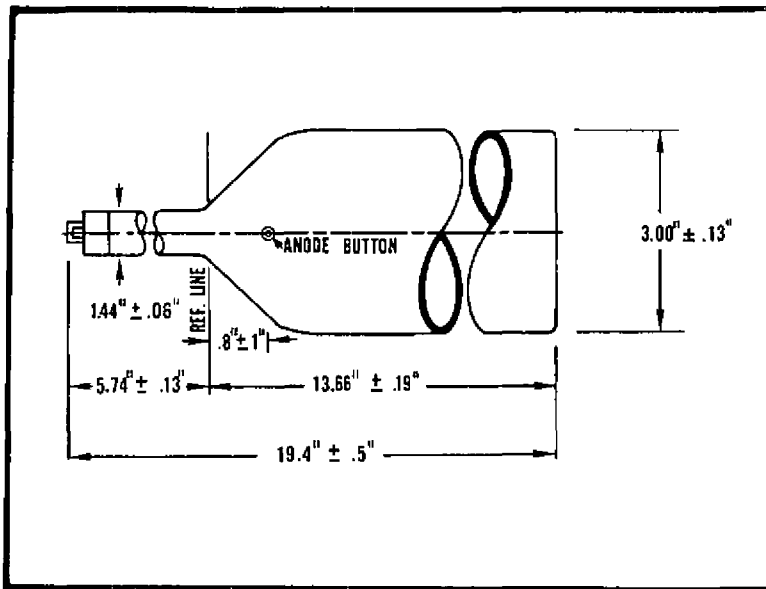
The resolution is measured by the compressed raster test pattern which has a 500 line resolution wedge. The contrast ratio of the wedge lines at extinction will vary from 2 to 5% at maximum resolution. Various other methods of determining resolution are in use, however the compressed raster test pattern offers simplicity and is generally understood.

TRANSFER CHARACTERISTICS



BRIGHTNESS VERSUS SCREEN CURRENT



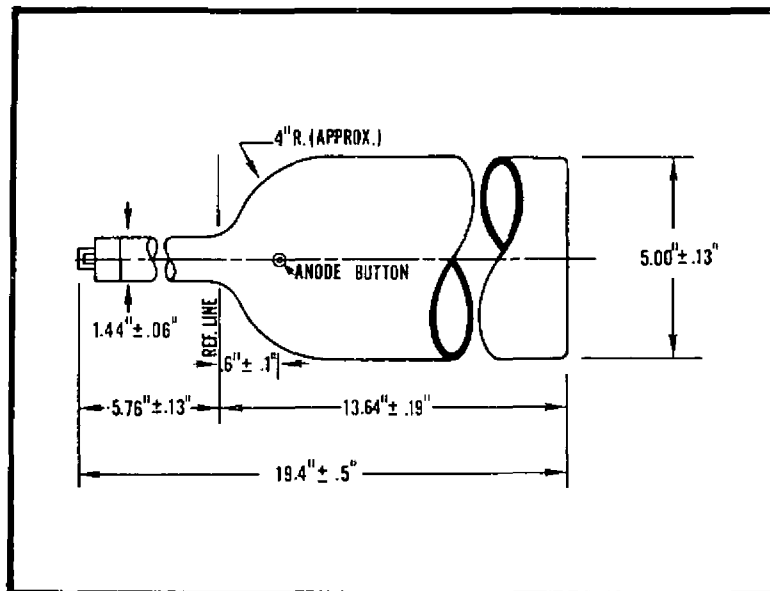


3AVP5

3AWP5

3AVP11

3AVP16

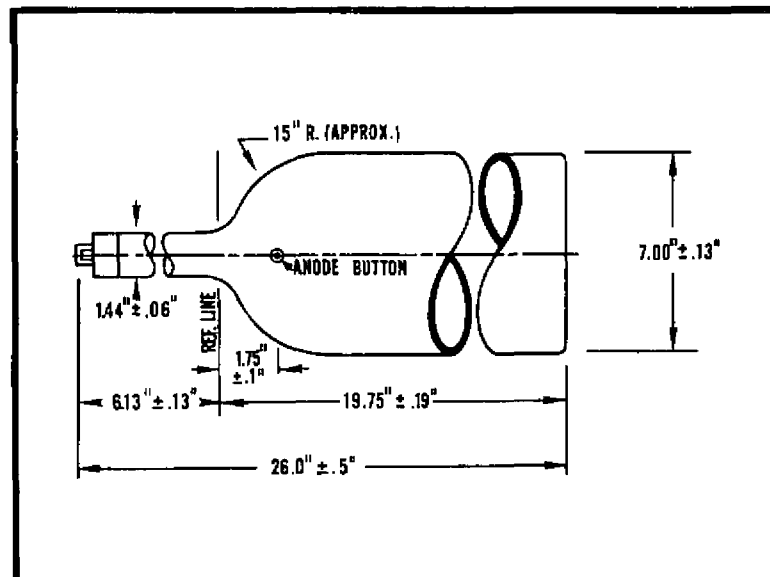


5CQP5

5CRP5

5CQP11

5CQP16



7AVP5

7AWP5

7AVP11

7AVP16