

Bill WANE



APPROVED FOR
C.R.T. PROD.
PILOT RUN ONLY

PROCESS SPECIFICATIONS

NO. 8-2027

REV. Orig. P.R.
DATE 4-2-74

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TEST SPECIFICATIONS FOR TYPE T4651 SERIES CATHODE RAY TUBE
AS USED IN THE 455 OSCILLOSCOPE (For Q.A. Sample Only)

All the given specifications refer to the following test voltages (measured with respect to cathode).

<u>ELECTRODE</u>	<u>PIN</u>	<u>VOLTAGES</u>
Post Accelerator	None	12,000 VDC \pm 5%
Geometry Electrode	10	2,040 to 2,090 VDC**
Post Accelerator Grid	12	1,850 \pm 10 VDC
Isolation Shield) &) D3D4 Shield)	7	2,014 VDC****
Average of (D1D2 (D3D4 Plates	None	2,048 \pm 4 VDC 2,014 \pm 4 VDC
Astigmatism Electrode	5	2,000 to 2,015 VDC***
Focusing Electrode	4	325 to 525 VDC***
Accelerator Electrode	8	2,032 VDC \pm 5 VDC*
Heater Voltage	1,14	6.3 VAC \pm 0.3 V RMS

- * In an actual test set-up, the cathode voltage may vary \pm 1% of the above voltage.
- ** Recommended Range. Adjust for best geometry.
- *** Recommended Range. Adjust for best overall focus.
- **** To be within \pm .5 volts of D3D4 plate average.

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TEST CHARACTERISTICS		CONDITIONS	SPECIFICATIONS
Phosphor defects and opaque spots from mesh grid defects.			See P.S.8-0598
Wrinkled Mesh and Mesh Profile.			No visible distortion allowed that is detrimental to the overall aesthetic value or which causes an obvious degradation of the display.
Gun-Graticule Alignment. Grat: Internal Fixed		Align trace on left side of graticule.	$\pm 3^\circ$ (± 2.5 minor divisions)
High Voltage connection to Screen			See P.S.8-0595
Cathode Interface			See P.S.8-0595
Trace Orthogonality			$\pm 1.4^\circ$ (± 1.0 minor division)
Geometry		With a normal 8x10 cm square raster or time markers.	Maximum deviation from straight line: Horiz: 0.5 minor division. Vert: 0.5 minor division
Horizontal Resolution		Resolution is checked with time mark generator set at 100 μ s and time/sweep switch at 5.0 ms. $I_b = 1\mu A$	150 markers visible in 10 major divisions.
Spot Centering		Horizontal	Within ± 2.5 minor divisions from geometric center.
Spot Centering		Vertical	Within ± 3.5 minor divisions of geometric center.

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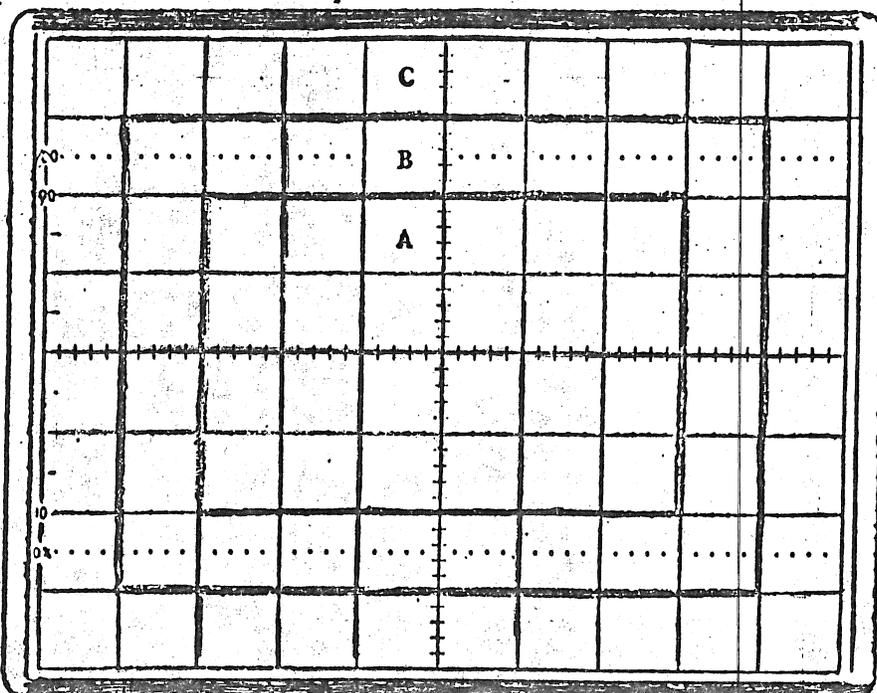
TEST CHARACTERISTICS		CONDITIONS	SPECIFICATIONS												
D3D4 Scan (Vertical)		At 8 div. scan, maximum beam interception per plate. $I_b = 10\mu A$	50%												
D1D2 Scan (Horizontal)		At 10 div. scan, maximum beam interception per plate. $I_b = 10\mu A$	50%												
D3D4 Deflection Factor (Vertical)		At optimum geometry. Range meter setting = 50.	2.25 to 2.75V/div (18.0 to 22.0V/scan)												
D1D2 Deflection Factor (Horizontal)		At optimum geometry. Range meter setting = 50.	5.8 to 7.0V/div. (58 to 70V/scan)												
Grid #1 Cutoff		Visual extinction of undeflected focused spot (unblanking off)	60-85V												
Cathode Current		With grid #1 drive of 50V from cutoff, use the following table: <table data-bbox="779 1260 909 1512"> <thead> <tr> <th>V_{co}</th> <th>I_k (Minimum)</th> </tr> </thead> <tbody> <tr> <td>60 - 64</td> <td>.70 mA</td> </tr> <tr> <td>65 - 69</td> <td>.63 mA</td> </tr> <tr> <td>70 - 74</td> <td>.58 mA</td> </tr> <tr> <td>75 - 79</td> <td>.52 mA</td> </tr> <tr> <td>80 - 85</td> <td>.47 mA</td> </tr> </tbody> </table>	V_{co}	I_k (Minimum)	60 - 64	.70 mA	65 - 69	.63 mA	70 - 74	.58 mA	75 - 79	.52 mA	80 - 85	.47 mA	
V_{co}	I_k (Minimum)														
60 - 64	.70 mA														
65 - 69	.63 mA														
70 - 74	.58 mA														
75 - 79	.52 mA														
80 - 85	.47 mA														
Beam Current		With a small display approximately 2x2 div. to avoid current interception by the deflection plates and erroneous reading at $I_k = 0.5$ mA	$I_b \geq 15\mu A$												
Linearity (Vertical)		Maximum (with 2 horizontal lines 2 major divisions apart vertically).	0.5 minor div.												
Burrs			See P.S.8-0595												

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TEST CHARACTERISTICS		CONDITIONS	SPECIFICATIONS
<p>Helix Flare</p> <p>Gun Flare</p> <p>Grid Emission</p> <p>Vertical Trace Width and Mesh Coating Quality</p>		<p>With $I_b = 1\mu A$, triggered 1 KHz square wave, amplitude 2 major div.</p>	<p>See P.S.8-0595</p> <p>See P.S.8-0595</p> <p>See P.S.8-0595</p> <p>Area A = 4x6 cm @ .055" Area B = 6x8 cm @ .060" Area C = 8x10 cm @ .070"</p> <p>No spurious emission or obvious ghost image evident when trace is scanned vertically.</p>
			<p>8x10 cm</p>
<p>Rod Charge</p> <p>After Test Phosphor Check</p> <p>D3D4 Effective Capacitance</p> <p>D1D2 Effective Capacitance</p> <p>Linearity (Horiz.)</p>		<p>Measure on QA Sample <u>Only</u>.</p> <p>Measure on QA Sample <u>Only</u>.</p> <p>Measure on QA Sample <u>Only</u>.</p>	<p>See P.S.8-0595</p> <p>See P.S.8-0595</p> <p>6.5 pf max.</p> <p>12.5 pf max.</p> <p>±5% deviations from average of center 8 major div.</p>