

MILITARY SPECIFICATION SHEET  
 ELECTRON TUBE, RECEIVING  
 TYPE 5702WB

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

DESCRIPTION: Pentode, subminiature, sharp cutoff

Outline --- 3-6 (EIA)  
 Base --- Pinch press (7 leads)  
 Envelope --- T3  
 Cathode --- Coated unipotential

Base connections:

Pin No.	---	1	2	3	4	5	6	7
Element	---	a	g2	h	h	g3	k	g1

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec1	Ec2	Ec3	Ehk	Rk	Rg1	Ik	Pp	Pg2	TE	Alt
Unit:	V	Vdc	Vdc	Vdc	Vdc	v	Ohms	Meg	mAdc	W	W	°C	ft
Maximum:	6.9	165	---	155	0	200	---	1.2	16.5	1.3	0.5	220	(see note 4)
Minimum:	5.7	---	-55	---	---	---	---	---	---	---	---	---	---

TEST

<u>CONDITIONS:</u>	6.3	120	0	120	0	0	200	0	---	---	---	---	---
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GENERAL:

Qualification - Required

Reliable tube

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
	<u>Quality conformance inspection, part 1</u>								
1256	Electrode current (1) (anode)			0.65	II	Ib	5.5	9.5	mAdc
1256	Electrode current (2) (anode)		Ec1 = -9.0 Vdc; Rk = 0	0.65	II	Ib	---	50	μAdc
1256	Electrode current (screen grid)			0.65	II	Ic2	1.7	3.5	mAdc
1266	Total grid current	1	Rg1 = 1.0 Meg	0.65	II	Ic1	0	-0.1	μAdc
1301	Heater current			0.65	II	If	190	210	mA
1306	Transconductance (1)			0.65	II	Sm	4,200	5,800	μmhos
1336	Heater-cathode leakage			0.65	II	Ihk	---	5.0	μAdc
1201	Short and discontinuity detection			0.4	II	---	---	---	---
	<u>Quality conformance inspection, part 2</u>								
1211	Insulation of electrodes			2.5	S3	R	250	---	Meg
1031	High-frequency vibration		Rp = 10,000 ohms	2.5	I	Ep	---	50	mVac
1246	Audio frequency noise		Esig = 70 mVac; Ec2 = 25 Vdc; Rg1 = 0.1 Meg; Rg2 = 1,000 ohms; Rp = 0.2 Meg; Rk = 4,000 ohms	2.5	I	EB	---	17	vu
1266	Grid emission	3	Ef = 7.5 V; Rg1 = 1.0 Meg; Ec1 = -10 Vdc	---	---	Ic1	0	-0.5	μAdc
1306	Transconductance (2)		Ef = 5.7 V	2.5	I	$\frac{\Delta S_m}{E_f}$	---	5.0	%
1311	Anode resistance			---	---	rp	0.15	---	Meg
1331	Direct-interelectrode capacitance		0.405-inch diameter shield	6.5	Code E	Cg1p Cin Cout	---	0.03 4.1 4.1	pF pF pF
1256	Electrode current (1) (anode) (tube operation time)		t = 20 seconds	4.0	S3	Ib	90	110	%
1031	Sweep-frequency vibration		Rp = 10,000 ohms; F = 30 to 1,000 Hz; 15 G; t = 3 minutes; positions X and Y only	4.0	S3	Ep	---	240	mv p to p

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
	<u>Quality conformance inspection, part 2</u> - Continued								
1116	Lead fatigue			2.5	Code F	---	---	---	---
2126	Envelope strain			2.5	I	---	---	---	---
1041	Shock	5	450 G; Ehk = 100 Vdc	6.5	See note 2	---	---	---	---
1031	Vibration fatigue (1)			6.5	See note 2	---	---	---	---
1031	Vibration fatigue (2)		10 G; t = 6 hours	6.5	See note 2	---	---	---	---
---	Shock and vibration-fatigue (1) and (2)-test end points:								
1031	High-frequency vibration			---	---	Ep	---	75	mVac
1336	Heater-cathode leakage			---	---	Ihk	---	10	$\mu$ Adc
1306	Change in trans-conductance (1) of individual tubes			---	---	$\Delta S_m$ t	---	15	%
1266	Total grid current			---	---	Ic1	0	-1.0	$\mu$ Adc
1119	Glass-to-lead seal strain			6.5	Code F	---	---	---	---
1105	Permanence of marking			---	---	---	---	---	---

Symbol	Requirement or test	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
	<u>Quality conformance inspection, part 3</u>						
1506	Heater-cycling life		Ef = 7.5 V; Ehk = 140 Vac; Eb = Ec1 = Ec2 = Ec3 = 0	---	---	---	---
---	Heater-cycling life-test end point:						
1336	Heater-cathode leakage			Ihk	---	20	$\mu$ Adc
1516	Stability life		Ehk = 200 Vdc; Rg1 = 1.0 Meg; TA = room	---	---	---	---
---	Stability life-test end point:						
1306	Change in transconductance (1) of individual tubes			$\Delta S_m$ t	---	10	%
1501	Intermittent life	6	Ehk = 200 Vdc; Rg1 = 1.0 Meg; TA = room; TE = 200°C (min); Group E	---	---	---	---

Method	Requirement or test	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
	<u>Quality conformance inspection, part 3</u> - Continued						
---	Intermittent life-test end points (500 hours):						
1266	Total grid current			Ic1	0	-0.5	$\mu$ Adc
1301	Heater current			If	187	217	mA
1306	Change in transconductance (1) of individual tubes			$\Delta$ Sm t	---	20	%
1306	Transconductance (2)			$\Delta$ Sm Ef	---	15	%
1336	Heater-cathode leakage			Ihk	---	10	$\mu$ Adc
1211	Insulation of electrodes			R	50	---	Meg
1306	Transconductance (1), average change			Avg $\Delta$ Sm t	---	15	%
---	Intermittent life-test end points (1,000 hours):						
1266	Total grid current			Ic1	0	-1.0	$\mu$ Adc
1301	Heater current			If	177	223	mA
1306	Change in transconductance (1) of individual tubes			$\Delta$ Sm t	---	30	%
1336	Heater-cathode leakage			Ihk	---	15	$\mu$ Adc

## NOTES:

- This test shall be performed at the conclusion of the holding period.
- This test shall be conducted on the initial lot and thereafter on a lot approximately every 12 months. When one lot has passed, the 12-month rule shall apply. In the event of lot failure, the lot shall be rejected and the succeeding lots shall be subjected to this test until a lot has passed. MIL-STD-105, sample size code letter E, shall apply.
- Prior to this test, tubes shall be preheated 5 minutes at the conditions indicated below. The 3-minute test shall not be permitted. Test at specified conditions within 3 seconds after preheating. Grid emission shall be the last test performed on the sample selected for the grid emission test.

Ef	Eb	Ec1	Ec2	Ec3	Rk	Rg1
V	Vdc	Vdc	Vdc	Vdc	Ohms	Meg
7.5	120	0	120	0	200	1.0

- See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage in the basic document.
- A grid resistor of 0.1 megohm shall be added; however, this resistor shall not be used when a thyratron-type short indicator is used.
- Envelope temperature (TE) requirements, when measured in accordance with the temperature by conduction-band measurement (method 1226), will be satisfied if a TUT having bogey Ib ( $\pm 5$  percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.
- Revision letters are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:

Army - ER  
Navy - EC  
Air Force - 85

Review activities:

Air Force - 99  
DLA - ES

User activities:

Army - AR  
Navy - AS, OS, MC, CG  
Air Force - 11

Preparing activity:  
Navy - EC

Agent:  
DLA - ES

(Project 5960-3246)