

INCH-POUND

MIL-E-1/9H
2 July 2004
SUPERSEDING
MIL-E-1/9G
30 March 1983

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

TYPE 5750

This specification sheet is inactive
for new design after 11 June 1999.

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

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Miniature, pentagrid converter.

Outline..... 5-2 EIA
Base E7-1
Envelope..... T5-1/2
Cathode..... Coated unipotential
Base connections:
Pin No. - - - - 1 2 3 4 5 6 7
Element - - - G1 k,g5 h h p g2,g4 g3

ABSOLUTE RATINGS:

Parameter:	Ef	Eb	Ec1	Ec2 and 4	Ec3	Ehk
Unit:	V	Vdc	Vdc	Vdc	Vdc	v
Maximum:	6.9	330	---	110	0, -55	100
Minimum:	5.7	---	---	---	---	---
<u>TEST CONDITIONS:</u>	6.3	250	0	100	-1.5	---

ABSOLUTE RATINGS:

Parameter:	Ik	Ic1	Pp	Pg2 and 4	TE	Alt
Unit:	mAdc	mAdc	W	W	°C	ft
Maximum:	15.5	1.0	1.2	1.2	165	(See note 11)
Minimum:	---	---	---	---	---	---
<u>TEST CONDITIONS:</u>	---	---	---	---	---	---

GENERAL:

Qualification - Required.

Reliable tube

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TABLE I. Conformance inspection.

Method MIL-STD- 1311	Requirement or test	Conditions	Acceptance Level (note 12)	Symbol	Limits		Unit
					Min	Max	
	<u>Conformance inspection, part 1</u>						
1256	Plate current (1)	See note 4	0.4	I _b	1.5	3.5	mAdc
1256	Plate current (2)	E _b = 100 Vdc See note 5 E _{c1} = -14 Vdc; E _{c3} = 0	0.4	I _b	---	50	μAdc
1266	Total grid 3 current	E _{c3} = -2 Vdc See notes 1 and 4	0.4	I _{c3}	0	-1.0	μAdc
1301	Heater current		0.4	I _f	275	325	mA
1306	Transconductance (1) (oscillator)	E _b = 100 Vdc; E _{c3} = 0 See note 5	0.4	S _m	6,000	9,600	μmhos
1326	Transconductance (1) (conversion)	See note 4	0.4	S _c	300	700	μmhos
1336	Heater-cathode leakage		0.4	I _{hk}	---	10	μAdc
1201.5	Shorts and discontinuity detection		0.4	---	---	---	---
	<u>Conformance inspection, part 2</u>						
1105	Permanence of marking		---	---	---	---	---
1211	Insulation of electrodes		2.5	R	100	---	MegΩ
1031	Low-frequency vibration	E _{c1} = E _{c3} = -3 Vdc; R _p = 10,000 ohms	6.5	E _p	---	300	mVac
---	Blocking	E _{c1} = -3 Vdc See note 3; R _{g3} = 0 (except for meter resistance)	2.5	---	---	---	---

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TABLE I. Conformance inspection - Continued.

Method MIL-STD- 1311	Requirement or test	Conditions	Acceptance Level (note 12)	Symbol	Limits		Unit
					Min	Max	
	<u>Conformance inspection, part 2</u> - Continued						
1256	Screen-grid current	See note 4	2.5	Ic2 and Ic4	---	10.6	mAdc
1256	Cathode current (oscillator)	Eb = 100 Vdc; Ec3 = 0 See note 5	6.5	Ik	16	33	mAdc
1306	Transconductance (2) (oscillator)	Ef = 5.7 Vdc; Eb = 100 Vdc; Ec3 = 0 See note 5	2.5	$\frac{\Delta S_m}{E_f}$	---	15	%
1316	Amplification factor (oscillator)	Eb = 100 Vdc; Ec3 = 0 See note 5	6.5	M μ	18.5	26.5	---
1326	Transconductance (2) (conversion)	Ec3 = -30 Vdc See note 4	2.5	Sc	1	50	μ hos
1326	Transconductance (3) (conversion)	Ec3 = -6 Vdc See note 4	6.5	Sc	60	300	μ hos
1331	Direct-interelectrode capacitance	No shield	6.5	Cg3-p Cg3-all Cp-all	---	0.30 8.5 10.1	pf pf pf
1121	Base strain		---	---	---	---	---
2126	Glass strain		2.5	---	---	---	---
1041	Shock	G = 450; Ec1 = Ec3 = -3 Vdc; Ehk = 100 Vdc; Rg1 = Rg3 = 0.1 Meg Ω ; See note 10	---	---	---	---	---
1031	Vibration-fatigue test	G = 2.5; fixed frequency; F = 25 min, 60 max	6.5	---	---	---	---

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TABLE I. Conformance inspection - Continued.

Method MIL-STD- 1311	Requirement or test	Conditions	Acceptance Level (note 12)	Symbol	Limits		Unit
					Min	Max	
---	Post-shock and vibration-fatigue test end points	Conversion trans-conductance (1)	---	Sc	250	---	μmhos
		Low-frequency vibration	---	Ep	---	450	mVac
		Heater-cathode leakage	---	l _{hk}	---	30	μAdc
		Total grid 3 current	---	l _{c3}	0	-2.0	μAdc
1506	Heater-cycling life test	E _{hk} = 135 Vdc; E _f = 7.5 V; E _b = E _{c1} = E _{c2} and 4 = E _{c3} = 0; 1 min "on" 4 min "off" See note 6	---	---	---	---	---
1336	Heater-cathode leakage		---	l _{hk}	---	20	μAdc
1516	Stability life test	E _{c1} = -16 Vdc; E _{hk} = +135 Vdc; R _{g3} = 0.05 MegΩ; TA = room See note 7	---	---	---	---	---
1326	Change in conversion transconductance (1) of individual tubes		---	$\frac{\Delta Sc}{t}$	---	10	%

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TABLE I. Conformance inspection - Continued.

Method MIL-STD- 1311	Requirement or test	Conditions	Acceptance Level (note 12)	Symbol	Limits		Unit
					Min	Max	
	<u>Conformance inspection, part 3</u> - Continued						
	Survival-rate life test end points:						
1201	Shorts and discontinuity detection		---	---	---	---	---
1326	Conversion transconductance (1)		---	Sc	230	---	μmhos
1501	Intermittent life test	Stability life-test conditions: TE = +165°C min See notes 2 and 7	---	---	---	---	---
	Intermittent life test end points: (500 hours)	See note 9					
	Inoperatives		---	---	---	---	---
1266	Total grid 3 current		---	Ic3	0	-1.0	$\mu\text{A dc}$
1301	Heater current		---	If	275	325	mA
1326	Conversion transconductance (1)		---	Sc	250	700	μmhos
1306	Transconductance (1) oscillator		---	Sm	4,700	---	μmhos
1336	Heater-cathode leakage		---	Ihk	---	20	$\mu\text{A dc}$
1211	Insulation of electrodes	E(g-all) = -100 Vdc E(g3-all) = -100 Vdc E(p-all) = -300 V dc	---	R	50	---	Meg Ω
1326	Conversion transconductance (1) average change Zero defectives		---	Avg $\frac{\Delta Sc}{t}$	---	17	%
			---	---	---	---	---

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TABLE I. Conformance inspection - Continued.

Method MIL-STD- 1311	Requirement or test	Conditions	Acceptance Level (note 12)	Symbol	Limits		Unit
					Min	Max	
	<u>Conformance inspection, part 3 - Continued</u>						
	Intermittent life-test end points: (1,000 hours)	See note 9					
---	Inoperatives		---	---	---	---	---
1266	Total grid 3 current		---	Ic3	0	-1.0	μAdc
1301	Heater current		---	If	275	325	mA
1326	Conversion trans- conductance (1)		---	Sc	230	700	μmhos
1306	Transconductance (1) oscillator		---	Sm	4,500	---	μmhos
1336	Heater-cathode leakage		---	Ihk	---	20	μAdc
	Total defectives		---	---	---	---	---

NOTES:

1. This test to be performed at the conclusion of the holding period.
2. Envelope temperature (TE) requirements, when measured in accordance with the temperature by conduction-band measurement (MIL-STD-1311, method 1226), will be satisfied if a tube having bogey Ib (±5 percent) under normal test conditions, is determined to operate at minimum specified temperature at any position in the life-test rack.
3. Ic3 shall not become negative when Ec3 is varied from 0 to +30 V dc.
4. Insert 20,000 ohms from grid 1 to ground. Apply sufficient ac signal to grid 1 to produce 0.5 mAdc average grid current. Other equipment which correlates with MIL-STD-1311, method 1326 may be used.
5. Nonoscillating condition. Tie grids 2 and 4 to plate; tie grid 3 to cathode.
6. This test shall be made on a lot-by-lot basis.
7. Apply 16.5 Vac, 60 cycle, signal to grid 1 through a 250-ohm isolating resistor.

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NOTES - Continued.

8. 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 passes. (See note 12).
9. If a tube is defective for more than one characteristic, the characteristic appearing first in the life-test end-point column shall constitute the failure.
10. Grid resistors of 0.1 megohm shall be added; however, these resistors shall not be used when a thyatron-type short indicator is employed.
11. See 6.5.2.3 for altitude (low pressure) rating.
12. This specification sheet uses accept on zero defect sampling in accordance with MIL-PRF-1, table III.

Referenced documents. In addition to MIL-PRF-1, this specification sheet sheet references MIL-STD-1311.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5960-3716)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.