MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

TYPE 5784WB

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, dual control

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

Base connections:

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

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec1	Ec2	Ec3	Ehk	Ic1	Rk
Unit:	V	Vdc	Vdc	Vdc	Vdc	v	mAdc	Ohms
Maximum:	6.9	165	0	155	30	200	1.0	---
Minimum:	5.7	---	-55	---	-55	---	---	
TEST CONDITIONS:	6.3	120	0	120	0	0	---	230

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Rg1	Ik	Pp	Pg2	Ic3	TE	Alt
Unit:	Meg	mAdc	W	W	mAdc	°C	ft
Maximum:	1.2	16.5	--- (see note 8)	--- (see note 8)	0.2	220	see note 2)
Minimum:	---	---	---	---	---	---	---
TEST CONDITIONS:	---	---	---	---	---	---	---

GENERAL:

Qualification - Required

Reliable tube

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
	Quality conformance inspection, part 1								
1255	Electrode current (1) (anode)			0.65	II	Ib	3.9	7.1	mAdc
1265	Total grid current	9		0.65	II	Ic1	---	-0.3	µAdc
1301	Heater current			0.65	II	If	190	210	mA
1305	Transconductance (1)			0.65	II	Sm	2,650	3,950	µmhos
1335	Heater-cathode leakage			0.65	---	Ihk	---	5.0	µAdc
1201	Short and discontinuity detection			0.4	II	---	---	---	---
	Quality conformance inspection, part 2								
1211	Insulation of electrodes			2.5	S3	R	100	---	Meg
1031	High-frequency vibration		Rp = 10,000 ohms	2.5	I	Ep	---	75	mVac
1245	Audio frequency noise	3	Esig = 70 mVac; Rg1 = 0.1 Meg; Ec2 = 19 Vdc; Rg2 = 1,000 ohms; Rp = 0.2 Meg	2.5	I	EB	---	---	---
1255	Electrode current (2) (anode)	3	Ec3 = -10 Vdc	2.5	I	Ib	---	200	µAdc
1255	Electrode current (3) (anode)	3	Ec3 = -6 Vdc	2.5	I	Ib	5	---	µAdc
1255	Electrode current (4) (anode)		Ec1 = -9 Vdc	2.5	I	Ib	---	200	µAdc
1255	Electrode current (5) (anode)		Ec1 = -5 Vdc	2.5	I	Ib	5	---	µAdc
1255	Electrode current (screen grid)			2.5	I	Ic2	2.8	5.4	mAdc
1265	Grid emission	4	Ef = 7.5 V; Ec1 = -10 Vdc	6.5	S3	Ic1	---	-0.5	µAdc
1305	Transconductance (2)		Ef = 5.7 V	2.5	I	ΔSm Ef	---	10	%
1305	Transconductance (3)	3	Ec3 = -1.0 Vdc	6.5	S3	Sg3-a	400	1,100	µmhos
1305	Transconductance (4)	3	Ec3 = 22 Vdc	6.5	S3	Sg3-a	---	25	µmhos
1331	Direct-interelectrode capacitance		0.405 inch diameter shield	6.5	Code E	Cg1p Cin Cout	--- 3.5 2.8	0.030 5.5 4.4	pF pF pF

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits Min	Limits Max	Unit
	Quality conformance inspection, part 2 - Continued								
1256	Electrode current (1) (anode) (tube operation time)		t = 20 seconds	4.0	S3	Ib	90	110	%
1031	Sweep-freqency vibration	5	Rp = 10,000 ohms; F = 30 to 1,000 Hz; 15 G; t = 3 minutes; position X and Y only	4.0	S3	ep	---	300	mv p to p
1116	Lead fatigue			2.5	Code F	---	---	---	---
2126	Envelope strain			2.5	I	---	---	---	---
1041	Shock	6	450 G; Ehk = 100 Vdc	---	---	---	---	---	---
1105	Permanance of marking			---	---	---	---	---	---
1119	Glass-to-lead seal strain			6.5	Code F	---	---	---	---
1031	Vibration-fatigue (1)			6.5	See note 1	---	---	---	---
1031	Vibration-fatigue (2)		10 G; t = 6 hours	6.5	See note 1	---	---	---	---
---	Shock and vibration-fatigue (1) and (2)-test end points:								
1031	High-frequency vibration			---	---	Ep	---	125	mVac
1336	Heater-cathode leakage			---	---	Ihk	---	20	µAdc
1306	Change in trans-conductance (1) of individual tubes			---	---	ΔSmt	---	15	%
1266	Total grid current			---	---	Ic1	---	-1.0	µAdc

Symbol	Requirement or test	Notes	Conditions	Symbol	Limits Min	Limits Max	Unit
	Quality conformance inspection, part 3						
1506	Heater-cycling life		Ef = 7.5 V; Ehk = 140 Vac; Eb = Ec1 = Ec2 = Ec2 = 0	---	---	---	---
---	Heater-cycling life-test end point:						
1336	Heater-cathode leakage			Ihk	---	20	µAdc
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			ΔSmt	---	10	%

Method	Requirement or test	Notes	Conditions	Symbol	Limits Min	Limits Max	Unit
	Quality conformance inspection, part 3 - Continued						
1501	Intermittent life	7	Ehk = 200 Vdc; Rg1 = 1.0 Meg; TA = room; TE = 220°C (min); Group E	---	---	---	---
---	Intermittent life-test end points (500 hours):	8					
1266	Total grid current			Ic1	---	-0.6	µAdc
1301	Heater current			If	188	212	mA
1306	Change in transconductance (1) of individual tubes			ΔSm t	---	20	%
1306	Transconductance (2)			ΔSm Ef	---	15	%
1336	Heater-cathode leakage			Ihk	---	10	µAdc
1306	Transconductance (1), average change			Avg ΔSm t	---	15	%
---	Intermittent life-test end points (1,000 hours):						
1266	Total grid current			Ic1	---	-1.0	µAdc
1301	Heater current			If	188	212	mA
1306	Change in transconductance (1) of individual tubes			ΔSm t	---	25	%
1336	Heater-cathode leakage			Ihk	---	15	µAdc

NOTES:

1. This test shall be conducted on the initial lot and thereafter on a lot approximately every 12 months [illegible] one lot has passed, the 12-month rule shall apply. In the event of lot failure, the lot shall be [illegible] 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.
2. See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage in the basic document.
3. The reference point for Ec3 shall be the negative side of the cathode resistor.
4. Prior to this test, tubes shall be preheated a minimum of 5 minutes at the conditions indicated below. The 3-minute test shall not be permitted. Without removing the tube from the preheat socket, the preheat conditions shall be applied, except Ec1 = -10 V, and the grid current reading made within 3 seconds after the end of the preheat period. 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	230	1.0

5. The impedance of the anode voltage supply shall not exceed that of a 40-µF capacitor at 10 Hz.
6. 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.
7. 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 (±5 percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.
8. The design application maximum rating of the tube shall not exceed 0.79 watts per anode power dissipation and shall not exceed 0.6 watts for grid No. 2 power dissipation.
9. This test shall be performed at the conclusion of the holding period.
10. 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:
Army - MI
Navy - MC
Air Force - 99
DLA - ES

User activities:
Army - ME, AR
Navy - AS, OS, CG
Air Force - 11

Preparing activity:
Navy - EC

Agent:
DLA - ES

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