INCH-POUND
MIL-PRF-1/757K
17 October 2008
SUPERSEDING
MIL-E-1/757J
21 November 1973

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON

TYPE 5643

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

Inactive for new design after 7 March 1997.

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

DESCRIPTION: Tetrode

Outline	---	3-1
Base	---	B8-10
Envelope	---	T3
Mounting position	---	Any
Weight	---	0.12 ounce nominal

Base connections:

Pin No.	---	1	2	3	4	5	6	7	8
Element	---	a	g2	h	g2	k	h	g1	g2

ABSOLUTE RATINGS:

Parameter:	Ef	epx	epy	Ec1	Ec2	Ehk	tk	ib	Ik	TA	Alt
Unit:	V	V	V	Vdc	Vdc	Vdc	sec	ma	mAdc	°C	ft
Maximum:	6.6	500	500	---	---	+25	---	100	16	+100	---
Minimum:	6.0	---	---	-200	-100	-100	10	---	---	-55	See Note 1
TEST CONDITIONS:	6.3	---	---	---	0	0	---	---	---	---	---

GENERAL:

Qualification – Not Required

Reliable tubes

TABLE I. Testing and inspection.

Method MIL-STD-1311	Requirement or test	Conditions	Acceptance level 8/	Symbol	Limits						Unit
					Mim	Lay	Bogey	Ual	Max	Ald	
	Conformance inspection, part 1 (See note 8)										
Appen-dix D 30(a), 40	Visual and mechan-ical inspection criteria		---	---	---	---	---	---	---	---	---
Appen-dix D 30(b)	Dimensions	Outline 3-1; dimensions A thru E	1.0	---	---	---	---	---	---	---	---
1201	Short and discon-tinuity detection (for reliable tubes)		0.4	---	---	---	---	---	---	---	---
3241	Heater current		---	If	---	144	150	156	---	12	mA
3241	Heater current		0.65	If	140	---	---	---	160	---	mA
1336	Heater-cathode leakage	Ehk=+25 Vdc	0.65	+Ihk	---	---	---	---	10	---	µAdc
		Ehk=-100 Vdc		-Ihk	---	---	---	---	10	---	µAdc
3201	Critical grid voltage for conduction (1)	Epp=350 Vac; Rg1=10 MegΩ; Rp=10,000 ohms See note 2	0.65	Ecc1	-2.0	---	---	---	-4.0	---	Vdc
3201	Critical grid voltage for conduction (2)	Epp=350 Vac; Rg1=10 MegΩ; Rp=10,000 ohms	0.65	Ecc1	---	---	---	---	-6.0	---	Vdc
3201	Critical anode voltage for conduction	Vary Ebb; Ecc1=0; Rg1=0.1 MegΩ; Rp=10,000 ohms	0.65	Ebb	---	---	---	---	26	---	Vdc
	Conformance inspection, part 2										
1116	Lead fatigue		2.5	---	---	---	---	---	---	---	arcs
2126	Glass strain	See note 3	6.5	---	---	---	---	---	---	---	---
1041	Shock	450G	---	---	---	---	---	---	---	---	---
1231	Pulse emission	e=180±9 v; prr=120±5; Ra=150 ohms; Rp=100 ohms; Zm=75.0 ohms; t=3(max); calibration resistor = 50 ohms	2.5	etd	---	---	---	---	76	---	v

TABLE I. Testing and inspection.. Continued

Method MIL-STD-1311	Requirement or test	Conditions	Acceptance level 8/	Symbol	Limits						Unit
					Min	Lal	Bogey	Ual	Max	Ald	
	Conformance inspection, part 2 continued										
---	Post-shock end points:										
1336	Heater-cathode leakage	Ehk=+25 Vdc	---	Ihk	---	---	---	---	20	---	µAdc
		Ehk=-100 Vdc		Ihk	---	---	---	---	20	---	µAdc
1261	Anode voltage		---	Ebb	---	---	---	---	26	---	Vdc

Method MIL-STD-1311	Requirement or test	Conditions	Acceptance level 8/	Symbol	Limits		Unit
					Min	Max	
	Conformance inspection, part 3						
1506	Heater-cycling life test	Ef=7.0 V; 1 minute “on” 4 minutes “off”; Eb=Ec1=Ec2=0 Ehk=18 Vac	2.5	---	2,500	---	Cycles
1521	Survival-rate life test	Ib=16 mAdc; ib=100 ma; Rg1=50,000 ohms(min); Epp=350 Vac; Ehk=-100 Vdc; +25Vdc; Rp=5,000 ohms (approximately) TA=room See notes 4 & 5	---	---	---	---	---
---	Survival-rate life test end point:						
1201	Short and dis-continuity detection (inoperatives)		0.65	---	---	---	---
1501	Intermittent life-test operation						
1521	Survival-rate life test	tk=10 (max); TA=100°C (min) See notes 4 & 5	---	---	---	---	---

TABLE I. Testing and inspection. Continued

Method MIL-STD-1311	Requirement or test	Conditions	Acceptance level 8/	Symbol	Limits		Unit
					Min	Max	
	Conformance inspection, part 3 Continued						
	Intermittent life-test end points: (500 hours)						
	Inoperatives	See note 2	---	---	---	---	---
3241	Heater current		---	If	138	164	mA
3201	Grid voltage (1)		---	Eccl	-0.8	-5.0	Vdc
1261	Anode voltage		---	Ebb	---	70	Vdc
1231	Pulse emission		---	etd	---	100	v
1336	Heater-cathode leakage	Ehk=+25 Vdc Ehk=-100 Vdc	---	Ihk Ihk	--- ---	20 20	µAdc µAdc
----	Total defectives		---	---	---	---	---
	Periodic check tests						
1031A	Variable-frequency vibration	No voltages See note 7	10.0	---	---	---	---
1031A	Sweep-frequency vibration	10G; variable frequency See note 7	6.5	---	---	---	---
----	Post-sweep-frequency vibration test end points:						
1336	Heater-cathode leakage	Ehk=+25 Vdc Ehk=-100 Vdc	---	Ihk Ihk	--- ---	20 20	µAdc µAdc
1261	Anode voltage		---	Ebb	---	26	Vdc

NOTES:

1. See “Reduced pressure (altitude) rating” and altitude, maximum peak voltage in the basic document.
2. This test is to be the first test performed at the conclusion of the holding period.
3. Grid current or the appearance of ionized gas shall not be considered as indications of air leakage.
4. Adjust phase of grid voltage to provide start of conduction at the peak of the anode voltage.
5. Cycling of heater-cathode voltage shall be 30-seconds positive and 30-seconds negative.
6. Post-shock and sweep-frequency vibration-test end points, as specified herein, shall be the post-variable-frequency vibration end points.
7. This test shall be conducted on the initial lot and thereafter on a lot approximately every six months. When one lot has passed, the 6-month rule shall apply. In the event of a lot failure, the lot shall be rejected and the succeeding lots subjected to this test until a lot passes
8. This specification sheet utilizes an accept on zero defect sampling plan consistent with MIL-PRF-1, table III.

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

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 – 85
DLA – CC

Preparing activity:
DLA - CC

(Project 5960-2008-065)

Review activities:
Army – AR, MI
Navy – AS, CG, MC, OS, SH
Air Force – 99

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 http://assist.daps.dla.mil/.