

INCH-POUND

MIL-PRF-1/781F  
29 May 2013  
SUPERSEDING  
MIL-PRF-1/781E  
1 May 2007

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON

TYPE 6D4

INACTIVE FOR NEW DESIGN  
AFTER 30 APRIL 1997.

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

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

DESCRIPTION: Triode, noise generator.

Mounting position: Any.

Weight: 0.3 ounce (8.5 grams) nominal.

Base: E7-1 (EIA).

Envelope: T5-1/2 (5-2).

Pin connections:

Pin no.:	---	1	2	3	4	5	6	7
Element:	---	g	nc	h	h	k	nc	a

ABSOLUTE RATINGS:

Parameter:	Ef	Ebb	epx	epv	lb	ib	tk	Ec1
Unit:	V	V dc	v	v	mA dc	a	sec	V dc
Maximum:	6.93	250	350	350	25	0.110	---	-150
Minimum:	5.67	---	---	---	---	---	30	---
Test conditions:	6.3	125	---	---	---	---	---	---

ABSOLUTE RATINGS:

Parameter:	Rhk	Rg	Rp	Rk	Ehk	Du	TA
Unit:	MegΩ	MegΩ	Ohms	Ohms	V	%	°C
Maximum:	---	---	---	---	-110	0.75	+90
Minimum:	---	---	---	---	---	---	-55
Test conditions:	1.0	0.5	650	4,000	---	---	---

GENERAL:

Qualification - Not required.

This specification sheet uses accept on zero defect sampling in accordance with MIL-PRF-1, table III.

## MIL-PRF-1/781F

TABLE I. Requirements or tests.

Requirement or test	MIL-STD-1311 method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Conformance inspection, part 1</u>							
Grid-cathode voltage	---	1	Ec = -20 V dc; Rhk = 0	Egk	---	2.0	V dc
Heater current	3241	---		If	230	270	mA
Critical grid voltage for conduction (1)	3201	4		Ec	-11.0	-14.0	V dc
Voltage drop	3204	---	Rb/lb = 100 mA dc	Etd	---	18	V dc
<u>Conformance inspection, part 2</u>							
Heater-cathode leakage	1336	---	Ehk = -100 V dc	lhk	---	15	$\mu$ A dc
Critical grid voltage for conduction (2)	3201	---	Ebb = 50 V dc	Ec	-5.0	-7.0	V dc
Critical grid voltage for conduction (3)	3201	---	Ebb = 300 V dc	Ec	-21	-31	V dc
Noise output (1)	---	2	Ebb = 300 V dc; Rg = 0; Rp = 56,000 ohms	---	---	---	---
Noise output (2)	---	3	Ebb = 250 V dc; Rg = Rk = 0; Rp = 0.33 Meg $\Omega$	Output	10	---	v
<u>Conformance inspection, part 3</u>							
Life test	---	---	Group A; Ebb = 250 V dc; Ec = -20 V dc; Rp = 5,000 ohms; Rhk = disconnected; Ehk = 110 V; t = 500 hours	---	---	---	---
Life-test end points:	---						
Critical grid voltage for conduction (1)	3201	---		Ec	-9.5	-15.5	V dc
Noise output (2)	---	3		Output	9.0	---	v
Low-frequency vibration	1031	5	No voltages applied	---	---	---	---

See footnotes at top of next page.

TABLE I. Requirements or tests - Continued.

## NOTES:

1. Voltage measured across specified grid resistor.
2. The tube shall be placed in the circuit shown (see figure 1) in a constant magnetic field of  $375 \pm 10$  percent gaussses perpendicular to the normal electron path. The direction of the magnetic field shall be such as to deflect the electron beam toward the top of the tube (north pole of magnet at pin No. 7). The noise voltage measured at the output of the 1,000 Hz bandwidth filter shall not be less than the limits specified below for the various specified frequencies:

Frequency, MHz	Minimum noise voltage, $\mu\text{V rms}$
0.1	10,000
0.2	14,000
0.5	25,000
1.0	22,000
2.0	7,000
5.0	500
10.0	70

3. The tube shall be placed in the circuit shown (see figure 2) in a constant magnetic field of  $375 \pm 20$  percent gaussses which is perpendicular to the normal electron path. The direction of the magnetic field shall be such as to deflect the electron beam toward the top of the tube. The noise voltage measured at the anode of the tube and across the output of the circuit shall not be less than the specified limit in peak-to-peak volts. The oscilloscope used for noise amplitude measurement shall have a 3 dB video bandwidth extending to at least 4 MHz.
4. This test shall be the first test performed at the conclusion of the holding period.
5. This test shall be performed according to the life testing schedule given in MIL-PRF-1 paragraph 4.3.8.

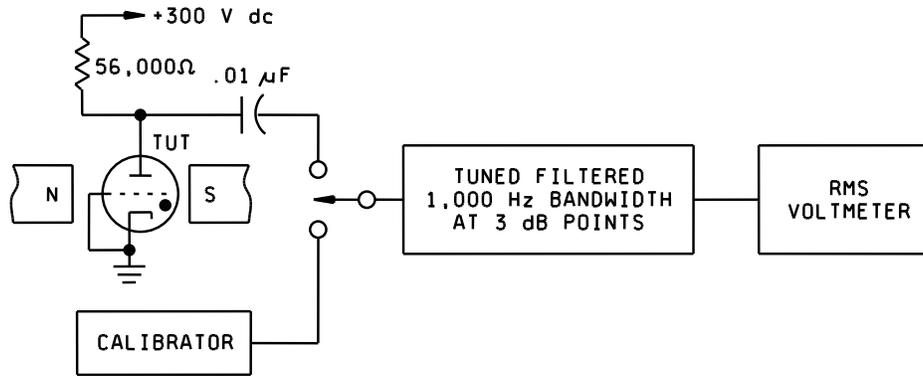


FIGURE 1. Noise voltage test circuit.

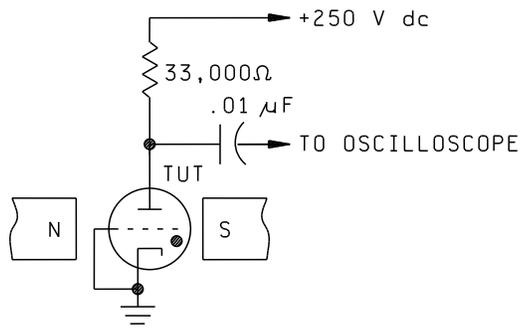


FIGURE 2. Noise voltage test circuit.

MIL-PRF-1/781F

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

The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - CR  
Navy - EC  
Air Force - 85  
DLA - CC

Preparing activity:

DLA - CC

(Project 5960-2013-011)

Review activities:

Army - AR  
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 <https://assist.dla.mil/>.