

INCH-POUND

MIL-PRF-1/1147C
4 August 2009
SUPERSEDING
MIL-PRF-1/1147B
29 June 1999

PERFORMANCE SPECIFICATION SHEET
ELECTRON TUBE, MICROWAVE NOISE SOURCE
TYPE 6782

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: Gaseous discharge diode, S band. 12/
Cathode: Filamentary type.
Dimensions: In accordance with outline drawing (see figure 3).
Base: Miniature Bi-pin, in accordance with outline drawing (see figure 3).
Mounting position: Any.

ABSOLUTE RATINGS:

Parameter:	I _f	I _b	E _{pp}	T _A	T _{Bulb}
Unit:	ma	mA dc	V ac	°C	°C
Maximum:	---	---	---	+85	+125
Minimum:	---	---	2,000	-55	---
Test conditions:	0	250	---	---	---

See footnotes at end of table I.

GENERAL:

The Preproduction sample approval requirements in CECOM Drawing SC-A-46600 hereby replace any qualification requirements existing in or otherwise referable to the data in this specification sheet.

Qualification – Not required. 13/ 14/

Holding Period – 168 hours.

AMSC N/A

FSC 5960

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TABLE I. Testing and inspection.

Inspection	Method MIL-STD-1311	Conditions	Symbol	Limits		Unit
				Min	Max	
<u>First Article</u>		<u>13/ 14/</u>				
Variable frequency	1031	No voltages applied <u>10/</u>	---	---	---	---
Electrode voltage	1261	lf-1 = 170 mA dc	Ef-1	---	15.0	V dc
		lf-2 = 170 mA dc	Ef-2	---	15.0	V dc
Voltage drop	3337	Forward and reverse <u>1/ 2/</u>	Etd-a	41	48	V dc
			Etd-b	41	48	V dc
Ionization	3347	Rp = 8,000 ohms <u>3/</u>	Ez	---	2,000	V ac
Noise figure	4260	F = 3,300 MHz <u>3/ 4/ 5/ 7/ 11/</u>	Nr-1	8.60	9.10	dB
Noise test	3278	F = 3,300 MHz <u>3/ 4/ 5/ 7/ 11/</u>	Nr-1	8.60	9.10	dB
Match (1)	4256	F = 3,270 MHz <u>4/ 6/</u> lb = 250 mA dc	VSWR	1.30:1	1.38:1	---
Match (2)	4256	F = 3,270 MHz <u>4/ 6/</u> lb = 0 mA dc	VSWR	---	1.02:1	---
Life test	---	Epp = 2,000 V ac Rp = 8,000 ohms <u>3/ 8/ 9/</u> (One minute on, two minutes off)	No.	2,500	---	Cycles
Life test end points:	---					
Noise figure	4260	<u>11/</u>	Nr-1	8.55	9.15	dB
Ionization	3347		Ez	---	2,000	V ac

- 1/ The tube shall be tested in the circuit shown in figure 1 or equivalent.
- 2/ In the test circuits on figure 1, with a filament current of 170 mA dc, the tube shall operate within three tries. The tube shall be tested and then reverse tested using alternate ends as anode and cathode. One reading of Etd shall be taken not less than 15 seconds after ionization, in each direction.
- 3/ The tube shall be tested in total darkness.
- 4/ The test shall be made with the tube mounted in the Noise Tube Mount (see figure 4) of this specification. Termination shall be made by a matched RG-48/U termination, having a minimum VSWR of 1.01:1 such as Hewlett-Packard S-914A, or equivalent.
- 5/ The frequency specified is that of the local oscillator.
- 6/ The frequency specified is that of the signal generator.
- 7/ Excess noise ratio shall be measured by comparison with an approved standard. The excess noise ratio measurement tests shall be made using the test circuit of figure 2 or equivalent. The VSWR, looking into the balanced mixer, shall not be greater than 2:1. The excess noise ratio measurement tests shall be made, using the test circuit of figure 2 or equivalent. The VSWR, looking into the balanced mixer, shall not be greater than 2:1.

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TABLE I. Testing and inspection - Continued.

- 8/ The tube shall be tested at an ambient temperature of +85°C.
- 9/ Life test samples shall consist of one tube per lot. A lot shall consist of one week's production. No lot shall be shipped until the completion of life test. Failure of initial samples shall require a successful life test of two additional tubes before release of a lot for shipment.
- 10/ Life test end points shall apply.
- 11/ The excess noise ratio (Nr -1) is defined in dB, as $Nr - 1 = 10 \log \left(\frac{T_e}{290} - 1 \right)$ where T_e is the effective electron temperature.
- 12/ The noise frequencies generated by this tube cover a broad band of frequencies. This bandwidth is limited only by the type of mount used. This tube is normally used with a mount in RG-48/U waveguide, at a 90° angle in the H plane. Other waveguide sizes may be used with properly adapted mounts.
- 13/ Qualification inspection and first article testing should be in accordance with Appendix E and F of MIL-PRF-1. The request for qualification inspection shall be addressed to: Defense Supply Center Columbus, CODE VQE, 3990 East Broad Street, Columbus, Oh 43216-5000..
- 14/ Electron tube type 6782 acquired directly or indirectly on Army contracts, shall be marked "US Army" either above or preceding the type designation as specified in the bid request or contract. The letters "JAN" or any abbreviation thereof shall not be used.

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government acquisition operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may be in any way related thereto.

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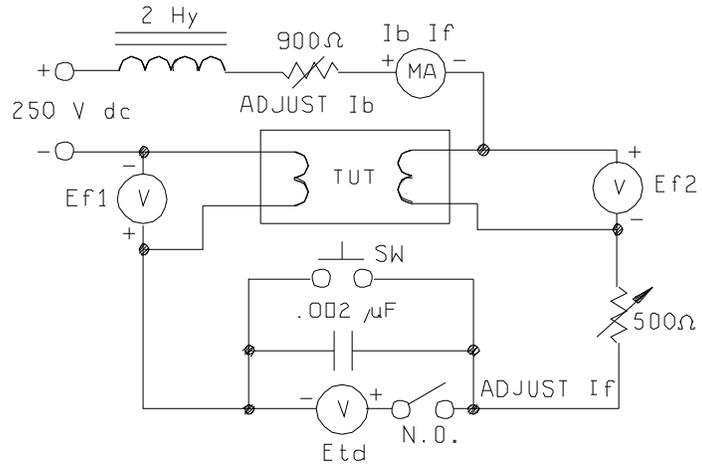


FIGURE 1. DC test circuit.

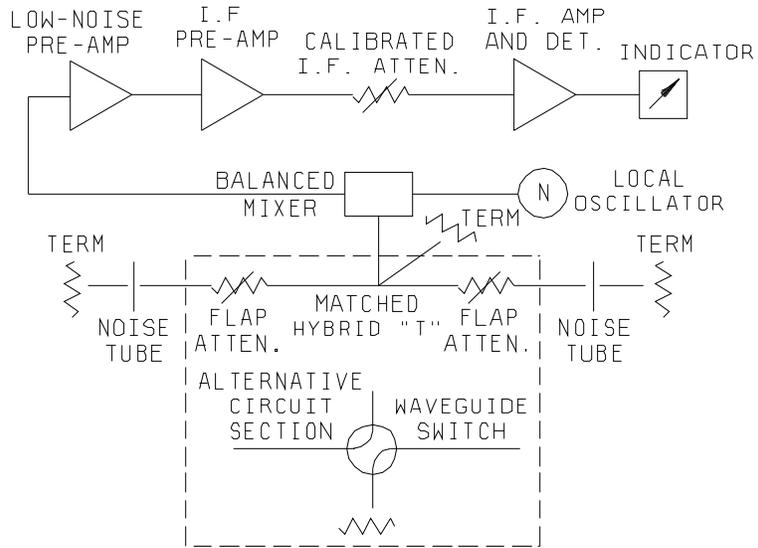
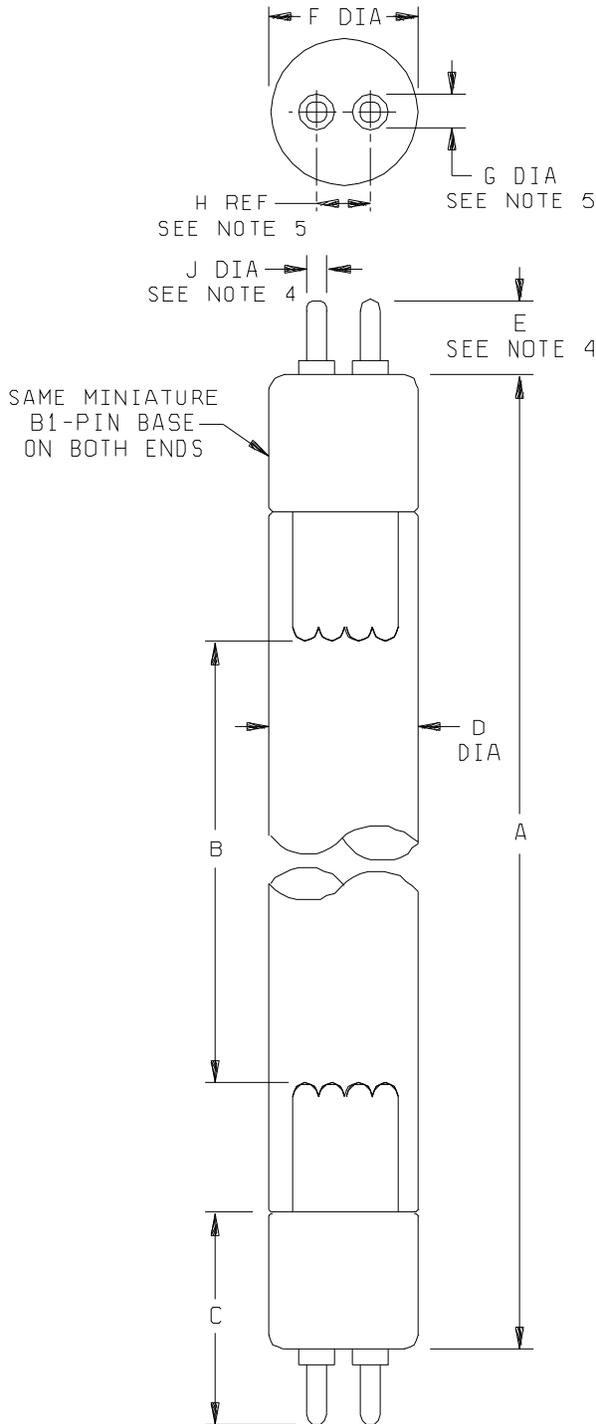


FIGURE 2. Test circuit for excess noise measurements.

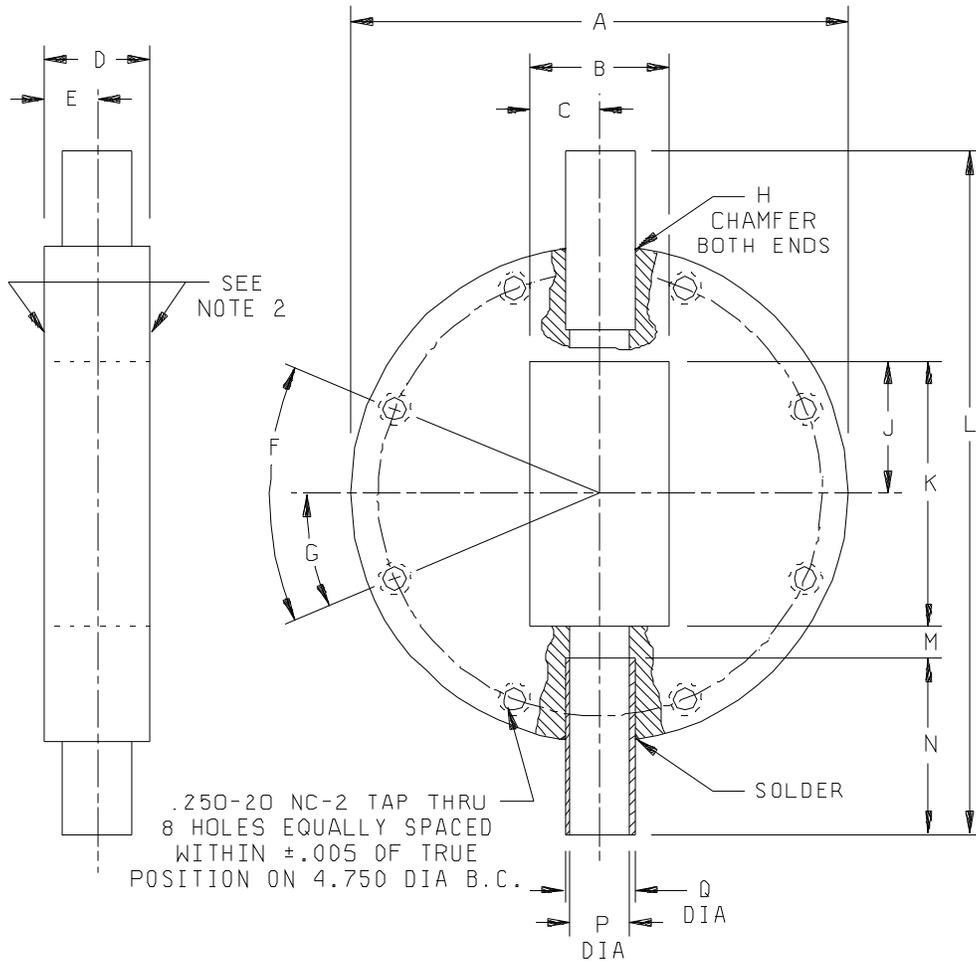


Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	8.187	8.594	207.95	218.29
B	5.750	---	146.05	---
C	---	.875	---	22.23
D	.555 DIA	.565 DIA	14.10 DIA	14.35 DIA
E	.260	.325	6.60	8.26
F	.550 DIA	.560 DIA	13.97 DIA	14.22 DIA
G	.135 DIA	.145 DIA	3.43 DIA	3.68 DIA
H	.187 REF		4.75 REF	
J	.090 DIA	.105 DIA	2.29 DIA	2.67 DIA

NOTES:

1. All dimensions are in inches, with metric equivalent.
2. Tubes must pass through gauge .585 DIA and 9 inches long.
3. Planes of pins to be approximately parallel on both ends of tube.
4. Includes solder and wire.
5. Outer circle indicates maximum excursion of pin including variations in center to center spacing, pin diameter and tilt. Reference dimension is center to center of .140 inch diameter circles.

FIGURE 3. Electron tube, type 6782 (noise source).



NOTES:

1. All dimensions are on the next page.
2. Sides shall be parallel within .002 inch total indicator reading.

FIGURE 4. Mount for electron tube, type 6782 (noise source).

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	5.3115	5.3135	134.912	134.963
B	1.483	1.487	37.67	37.77
C	.7415	.7435	18.834	18.885
D	1.123	1.127	28.52	28.63
E	.5615	.5635	14.262	14.313
F	45°		45°	
G	22.5°		22.5°	
H	.0625 x 45°		1.588 x 45°	
J	1.419	1.421	36.04	36.09
K	2.838	2.842	72.09	72.19
L	7.3115	7.3125	185.712	185.763
M	.325	.335	8.26	8.51
N	1.905	1.907	48.39	48.44
P	.623 DIA	.627 DIA	15.82 DIA	15.93 DIA
Q	.740 DIA	.745 DIA	18.80 DIA	18.92 DIA

FIGURE 4. Mount for electron tube, type 6782 (noise source) - Continued.

Referenced documents. In addition to MIL-PRF-1, this document references the following:

MIL-STD-1311
CECOM Drawing SC-A-46600

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.

Custodian:
Army - CR
DLA - CC

Preparing activity:
DLA - CC

(Project 5960-2009-029)

Review activities:
Army - MI

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