INCH-POUND

MIL-PRF-1/982C
10 May 2007
SUPERSEDING
MIL-E-1/982B
3 January 1977

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, KLYSTRON

TYPE 2K25

INACTIVE FOR NEW DESIGN
AFTER 21 JULY 1997.

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 specification sheet and MIL-PRF-1.

DESCRIPTION: Integral cavity, mechanically tuned, frequency range 8,500 to 9,660 MHz.

ABSOLUTE RATINGS:

Parameter:	Ef	Ers	Er	Ik	Ehk	F	Alt
Unit:	V	V dc	V dc	mA dc	V dc	MHz	ft
Maximum:	6.8	350	-400	37	50	---	10,000
Minimum:	5.8	---	---	---	---	---	---

PHYSICAL CHARACTERISTICS:

Dimensions: See figure 1.
Cathode: Coated unipotential.
Mounting position: Any.

TEST CONDITIONS: See note 2.

Parameter:	Ef	Ers	Er	Mode	F
Unit:	V	V dc	V dc	---	MHz
Test					
1	6.3	---	---	---	---
2	6.3	300	-143 to -200	A	9,660
3	5.8	300	-85 to -135	A	8,500
4	5.8	300	-125 to -180	A	9,370
5	5.8	300	-143 to -200	A	9,660
6	5.8	300	-75 to -120	B	9,370
7	5.8	300	-40 to -75 (See note 4)	C	9,370

GENERAL:

Qualification - Not required.

TABLE I. Requirements or tests.

MIL-STD-1311 method	Requirement or test	Test	Conditions	Symbol	Limits		Unit
					Min	Max	
	First article inspection						
1031	High-frequency vibration	---	No voltages	---	---	---	---
4027	Temperature coefficient	4	See figure 2	---	0	-0.20	MHz/°C
1216	Base material insulating quality	---	Phenolic wafer (see figure 1)	---	---	---	---
	Conformance inspection, part 1	---	See note 7				
1256	Electrode current (cathode)	2		Ik	---	32	mA dc
4214	Cathode emission	2	Ef = 5.8 V; t = 2 minutes	$\frac{\Delta Ik}{Ik}$	---	15	%
4250	Power output (1)	3, 4, 5	See notes 3 and 5	Po	20	---	mW
4213	Reflector voltage (1)	5		Er	-143	-200	V dc
---	Mode continuity	4	See note 1	---	---	---	---
4229	Total reflector current	5	See note 6	Ir	---	7.0	μA dc
4229	Reflector-leakage current	5	See note 6	Ir	---	5.0	μA dc
4229	Reflector-gas current	5	See note 6	Ir	---	2.0	μA dc
	Conformance inspection, part 2						
1336	Heater-cathode leakage	---	Ehk = ± 45 V dc	Ihk	0	100	μA dc
1301	Heater current	1		If	410	470	mA
1211	Insulation of electrodes	---	300 V dc; tube cold	Rkrs Rhrs	2.0 2.0	--- ---	MegΩ MegΩ
4250	Power output (2)	6		Po	15	---	mW
4213	Reflector voltage (2)	6		Er	-75	-120	V dc
4280	Electronic tuning range (1)	4	$\frac{Er}{50\%}$ max Po	ΔF	35	---	MHz
4280	Electronic tuning range (2)	4	$\frac{Er}{2.5\%}$ max Po	ΔF	---	145	MHz
4231	Electronic tuning hysteresis (1)	3, 5		Ratio	---	0.25	---

See notes at end of table.

TABLE I. Requirements or tests - Continued.

MIL-STD-1311 method	Requirement or test	Test	Conditions	Symbol	Limits		Unit
					Min	Max	
	Conformance inspection part 2 - Continued.						
4250	Power output (3)	7		Po	3.0	---	mW
4280	Electronic tuning range (3)	3, 5	$\frac{Er}{50\%}$ max Po; see note 5	ΔF	28	---	MHz
	Conformance inspection, part 3						
---	Life-test provisions	2	Group B	t	500	---	hrs
---	Life-test end point:						
4250	Power output (1)	3, 4, 5		Po	10	---	mW
4213	Reflector voltage (1)	3		Er	-85	-135	V dc

NOTES:

1. The mechanical tuning shall be set for F = 9,370 MHz ± 0.3 percent and sufficient 60 Hz ac voltage superimposed on the direct reflector voltage to suppress oscillation on the ends of the sweep. The crystal current as a function of reflector voltage shall be observed with an amplifier and an oscilloscope having a minimum pass band of 0.1 MHz. With the standing-wave introducer in accordance with Drawing 227-JAN, inserted in the guide, there shall be no discontinuity at the maximum power points for any phase of standing wave, when the magnitude of the standing wave is specified.

2. The tube shall be fixed firmly in a suitable socket by clamps in accordance with Drawing 227-JAN. The measurements on the tube in an oscillating state shall be made with the output line coupled into measuring circuits in accordance with Drawing 227-JAN.

3. The power output shall be above the limit specified throughout the specified frequency range.

4. Reflector voltage shall be adjusted to the value within the specified limits which is necessary to obtain maximum power output.

5. The tube shall meet the requirements of this test over the operating band, however, the test needs to be conducted only at the designated frequency or frequencies.

6. This test to be performed at the conclusion of the holding period.

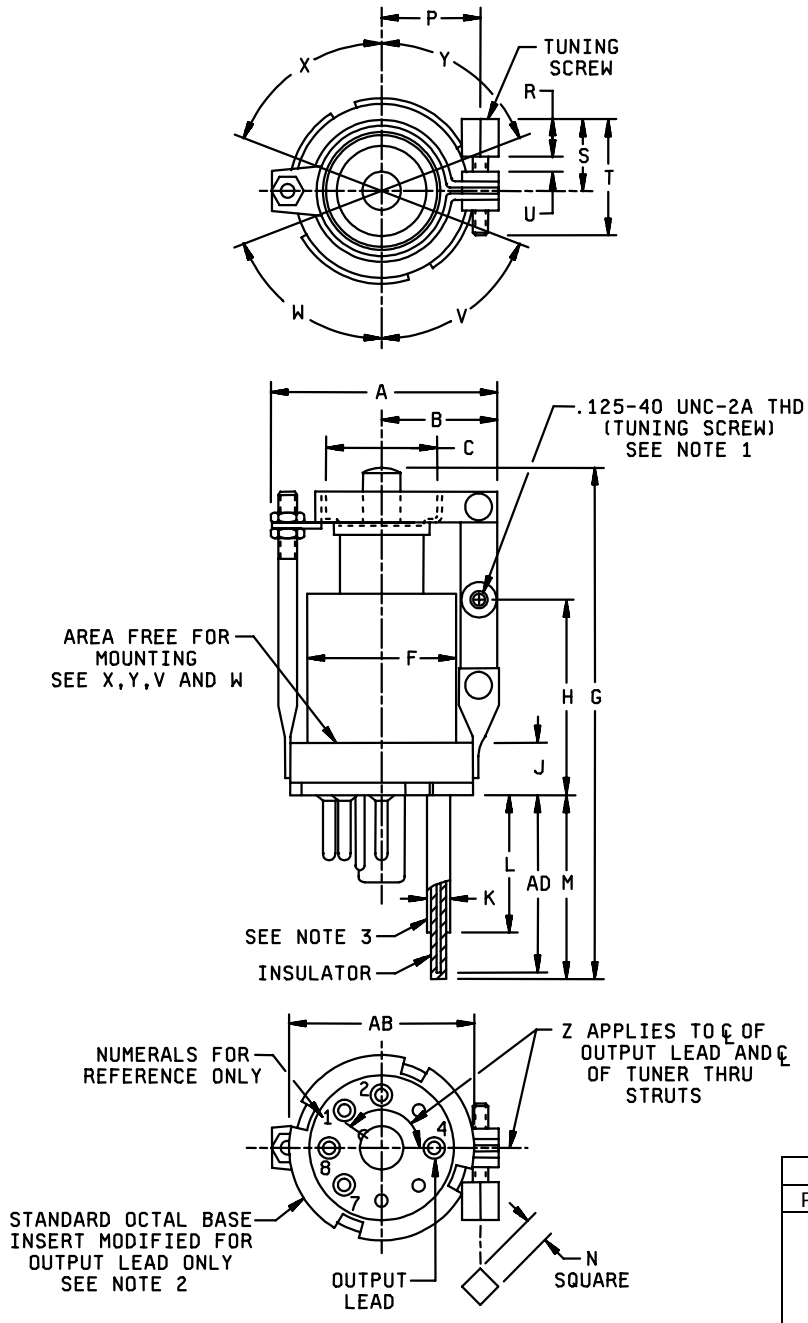
7. Unless otherwise specified, the acceptance level for all tests listed under conformance inspection, part 1, shall be 1.0 (see note 8).

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

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.

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

MIL-STD-1311 Drawing 227-JAN



Pin connections	
Pin No.	Element
1	sh
2	h
4	Output lead
7	h
8	Gun
Cap	r

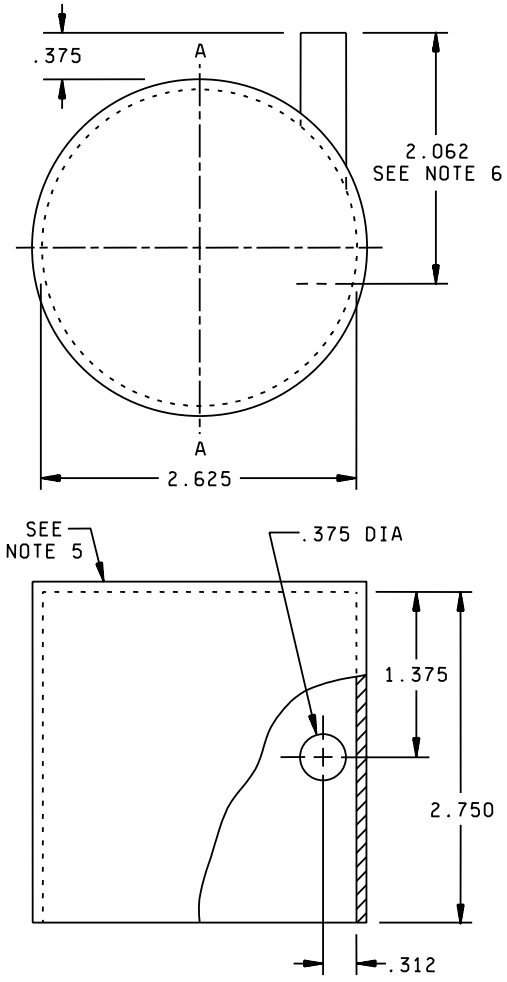
FIGURE 1. Outline drawing of electron tube type 2K25.

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 1				
H	1.312	1.438	33.32	36.53
J	.330	.400	8.38	10.16
K	.135	.145	3.43	3.68
L	.910	.930	23.11	23.62
M	1.203	1.234	30.56	31.34
P	.656	.719	16.66	18.26
Z	154°30'	160°30'	154°30'	160°30'
AD	1.168	1.188	29.67	30.18
Conformance inspection, part 2				
A	---	1.609	---	40.87
B	---	.859	---	21.82
F	1.000	1.016	25.40	25.81
G	---	3.562	---	90.47
N	.182	.192	4.62	4.88
R	.203	.234	5.16	5.94
S	.484	.516	12.29	13.11
U	---	.116	---	2.95
Qualification inspection				
C	.767	.797	19.48	20.24
T	.766	.797	19.46	20.24
V	---		70°	
W	---		70°	
X	---		70°	
Y	---		70°	
AB	1.271	1.312	32.28	33.32

NOTES:

1. The tuning screw shall be lubricated with Oildag or equal non-corrosive lubricant. It shall be capable of being operated smoothly through its entire range without perceptible binding.
2. The base shall be capable of being inserted in a gauge 1.219 (30.96 mm) thick having 4 holes .250 (6.35 mm) deep from the top of the gauge whose diameters are .103 (2.62 mm) for the contact pins. Remaining portion of hole to be clearance, approximately .016 (0.41 mm) larger in diameter and a fifth hole whose diameter .160 (4.06 mm) by 1.219 (30.96 mm) deep for the output lead. All holes located on the true center. Also a center hole having the contour of the pilot but with the clearance of .002 (0.05 mm) over the maximum diameter.
3. Nickel (30 msi silver permissible).
4. Dimensions are in inches.
5. Metric equivalents are given for general information only.

FIGURE 1. Outline drawing of electron tube type 2K25 - Continued.



Inches	mm
.312	7.92
.375	9.53
1.375	34.93
2.062	52.37
2.625	66.68
2.750	69.85

NOTES:

1. Dimensions are in inches (millimeter equivalents in table).
2. Unless otherwise specified, tolerance is .016 (0.41 mm).
3. The tube shall be mounted with an approximate clearance between it and the cover of one-half inch. The plane passing through the tuning mechanism and the longitudinal axis of the tube shall be parallel to plane A-A.
4. Enclosed metal cover in cylinder to shield it from external air currents.
5. Heating and cooling elements shall be applied to the top of cover.
6. Depth of penetration of thermometer.

FIGURE 2. Metal cover for temperature coefficient test.

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

Review activities:
Army - AR, CR4
Navy - AS, CG, MC, OS
Air Force - 99

Preparing activity:
DLA - CC

(Project 5960-2007-020)

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.