



22 CUMMINS ON STREET, BOSTON 13, MASSACHUSETTS

**THIS SHEET OF TEST LIMITS IS A PART OF SPECIFICATION JAN-1A**

Description: Magnetron

Ratings:	Ef	opy	ib	pi	Pi	tk	Du	tp	Anode T
Absolute	V	kv	a	kw	W	sec.		us	°C
Maximum:	6.3/10%	6.0	5.5	33	82.5	Note 2	.0025	2.5	120
Minimum:		5.0	3.5	17.5	---	120	---	---	---

Pulsing Service Note No. 3 \*\*Cathode: Oxide coated unipotential

Ref.	Test	Conditions	Min.	Max.
D-2	Qualification Approval:	Required for JAN Marking		
E-1d	Salt Spray Corrosion:	Omit		
F-2	Electrode Insulation:	Omit		
F-3	Holding Period	t=168 hrs.		
F-6a	Drop:	Note 1		
F-6b(1)	Vibration:	No voltage; t=60; F=25; Note 1		
F-6b(2)	Vibration:	No voltage; t=60; F=50; G=10		
F-5d	Dimensions:	Per attached drawing		
E-7c	Marking:			
F-10c	Cooling:	Per attached drawing		
F-5m	Low Pressure Operation	Pressure=50mm Hg abs; Oscillation (1):		
F-6i-	Heater Current:	Ef=6.3V	If: 0.13	0.60 A ←
F-10e	Oscillation(1): Coupling:	Dwg. No. UG-110/U		
F-10e(2)	Heater:	Ef=6.3V; Note 2		
F-10e(3)	Pulse Characteristics:	tp=0.9 to 1.1 us Du=0.002		
F-10e(4)	Average Anode Current:	Ib=9mA dc I=1.10 (max.)		
F-10e(5)	Pulse Voltage:		opy: 5.3	5.7 kv

Type 6270-6275

<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
F-10e(6)	Power Output:	t=300(Max.)	Po: 14	--- W
F-10e(7)	Frequency:	Temperature of Anode block, 40°C/50°C		
		Type 6274	F: 9000	9100 Mc
		6273	9101	9200
		6275	9201	9344
		6271	9345	9405
		6272	9406	9500
		6270	9501	9600
F-10e(8)	R.F. Bandwidth	Note 4	Bandwidth: ---	3 Mc
F-10e	<u>Oscillation (2):</u>			
	Coupling:	Dwg. No. UG-40/U		
F-10e(2)	Heater:	Ef=6.3V; Note 2		
F-10e(3)	Pulse Characteristics:	tp=2.0 to 2.4 us; prf=405 pps; Maximum rate of rise greater than 60 kv/us at 4.5 amperes peak; Notes 5 & 6		
---	Stability:	Note 7, $\mathcal{F} = 1.1$ (max.)		
F-10e	<u>Oscillation (3):</u>			
	Coupling:	Dwg. No. UG-40/U		
F-10e(2)	Heater:	Ef=6.3V; Note 2		
F-10e(3)	Pulse Characteristics:	tp=0.75 to 0.85 us; Note 5&6 prf=810 pps; Maximum rate of rise greater than 60 kv/us at 4.5 amperes peak		
---	Stability:	Note 7, $\mathcal{F} = 1.1$ (max.)		
F-5p	**Thermal Factor:	Ef=6.3V; Note 2	$\Delta F/OC: ---$	-0.25 Mc
F-5q	**Low Temperature Operation:	Ef=6.3V; Note 2		
F-10k	Pulling Factor:	Osc. (1)	$\Delta F: ---$	15 Mc
F-10n	**Permanent Magnet Stability:	Note 8		

<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
F-4	Life Test:	Group D; Osc.(2) or Osc.t: (3)	250	--- hrs.
F-4b	Life Test End Point:	Osc.(1), Osc.(2), and Po: Osc.(3) Bandwidth:	11 ---	W 3 Me

- Note 1. On evidence of satisfactory quality, the inspector may limit this test to ten (10) tubes per month when the tube is in continuous production.
- Note 2: The cathode heating time shall be a minimum of 120 seconds at temperatures greater than 0° C. and a minimum of 180 seconds at temperatures between 0° C. and -55° C.  
a. For duty cycle greater than .001, reduce heater voltage according to manufacturer's recommendations.  
b. Reduce heater voltage to 4.5 volts three seconds after applying high voltage.
- Note 3. The current pulse shall be essentially trapezoidal. The average amplitude as illustrated in Figure 8 of paragraph F-10e(3). The maximum instantaneous deviation from average shall not exceed 15%. The time of fall of the current pulse shall be less than 0.4 us. The maximum rate of rise of the voltage pulse shall not be greater than 60 kv/us at 4.5 amperes peak.
- Note 4. The R.F. Bandwidth shall be within the specified limit when tested under all the conditions of Oscillation (1) and in addition at  $I_b = 7.0$  mA dc and  $I_b = 11.0$  mA dc.
- Note 5. For these tests the modulator shall be that of the AN/APS-10 or its equivalent.
- Note 6. Rate of Rise measurement shall be made according to techniques outlined in Radiation Laboratory Report 523: VOLTAGE PULSE RATE-OF-RISE MEASUREMENTS by O. T. Fundingsland.
- Note 7. No pulse shall be missing as viewed on spectrum analyser, or no double traces of voltage or current appear, over a 5 sec. interval as peak current is varied from  $I_b = 3.5$  a to  $I_b = 5.5$  a.
- Note 8. With coils placed as per attached drawing, the operating voltage of the magnetron at  $I_b = 4.5$  a shall not be lowered more than 0.10 kv when 60 volts 60 cycles ac is placed across the coil connected in series. The direction of current in the coils shall be such that the coils attract.

COILS HAVE 500 TURNS EACH (RESISTANCE  $2.05 \pm .05$  OHMS) OF #18 ENAMELED SINGLE COTTON COVERED COPPER WIRE EXACTLY WOUND. THEY ARE AIR CORE CYLINDRICAL COILS HAVING AN INNER DIAMETER OF  $1 - 11/16 \pm 1/64$  AND A LENGTH OF  $2 \pm 1/16$  WHICH GIVES AN OUTER DIAMETER OF APPROXIMATELY 3.

