

6080WCJA

MIL-E-1/1655 (see note 4)  
19 March 1969  
SUPERSEDING  
MIL-E-1/1121B(1n part)  
26 October 1965

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING  
TYPE 6080WC 1/

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

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

This specification sheet includes test requirements necessary to assure a process average (4-lot sum) acceptable failure rate (AFR) of 1.1 percent per 1,000 hours with a 5.0 percent producer's risk and a reject failure rate (RFR) of 5.2 percent per 1,000 hours with a 90 percent consumer confidence. Notable improvement in reliability may be achieved when this tube is operated under conditions of reduced stress. Failure rate adjustment charts and associated data published in MIL-HDBK-217 should be consulted to determine the failure rate level applicable to operating conditions selected.

DESCRIPTION: Twin triode, low Mu  
Outline --- See figure 1  
Base --- B8-98  
Envelope --- T12  
Cathode --- Coated unipotential  
Base connections:

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

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec	Ehk	Rk/k	Rg/g	Ic/g	Ik/k	Pp/p	TE	Alt
Unit:	V	Vdc	Vdc	v	Ohms	Meg	mAdc	mAdc	W	°C	ft
Maximum:	6.6	250	0	450	---	(See note 2)	5.0	200	13	300	(See note 1)
Minimum:	6.0	---	---	---	---	---	---	---	---	---	---

TEST CONDITIONS: 6.3 135 0 --- 250 --- --- --- --- --- ---

GENERAL:

Qualification - Required (see note 3)

Reliable tube

1/ Formerly type 6080WB

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP LEVEL OR CODE	SYMBOL	LIMITS						UNIT
						MIN	LAL	BOGEY	UAL	MAX	ALD	
1031	<u>Qualification</u> Variable-frequency vibration	$E_{c1} = -7 \text{ Vdc}$ ; $R_k = 0$ ; $R_p = 2,000 \text{ ohms}$ (see note 9)	---	---	$E_p$	---	---	---	---	500	---	mVac
	<u>Quality conformance inspection, part 1 (see note 5)</u>											
1256	Electrode current (1) (anode)	See notes 6, 7, and 8	0.4	II	$I_b$	100	---	---	---	150	---	mAdc
1256	Electrode current (1) (anode)	See notes 6 and 7	---	---	$I_b$	---	115	125	135	---	25	mAdc
1266	Total grid current	$R_g = 1.0 \text{ Meg}$ ; $R_k = 125 \text{ ohms}$ (see notes 8 and 9)	0.4	II	$I_c$	0	---	---	---	-1.0	---	$\mu\text{Adc}$
1301	Heater current		0.4	II	$I_f$	2.35	---	---	---	2.65	---	A
1306	Transconductance (1)	See notes 6, 7, and 10	0.4	II	$S_m$	6,000	---	---	---	8,200	---	$\mu\text{mhos}$
1306	Transconductance (1)	See notes 6, 7, and 10	---	---	$S_m$	---	6,600	7,000	7,400	---	1,000	$\mu\text{mhos}$
1336	Heater-cathode leakage	$E_{hk} = +450 \text{ Vdc}$ $E_{hk} = -450 \text{ Vdc}$ (see note 6)	0.4	II	$I_{hk}$	---	---	---	---	25	---	$\mu\text{Adc}$
1201	Short and discontinuity detection		0.4	II	---	---	---	---	---	---	---	---
	<u>Quality conformance inspection, part 2 (see note 5)</u>											
1211	Insulation of electrodes	See note 6	2.5	I	$R$	200	---	---	---	---	---	Meg
1256	Electrode current (2) (anode)	$E_b = 250 \text{ Vdc}$ ; $E_c = -200 \text{ Vdc}$ (see notes 6 and 7)	2.5	I	$I_b$	---	---	---	---	10	---	mAdc
1306	Transconductance (2)	$E_f = 5.7 \text{ V}$ (see notes 6, 7, and 10)	2.5	I	$\Delta S_m$ $E_f$	---	---	---	---	10	---	%
1316	Amplification factor	$R_k = 250 \text{ ohms}$ (see notes 6, 7, and 10)	6.5	S3	$\mu$	1.5	---	---	---	2.5	---	---
1256	Electrode current (1) (anode) difference between sections		2.5	I	$\Delta I_b$	---	---	---	---	25	---	mAdc
1031	Low-frequency vibration	$R_k = 0$ ; $R_p = 2,000 \text{ ohms}$ ; $E_c = -7 \text{ Vdc}$ ; $F = 50 \text{ to } 500 \text{ Hz}$ ; $2.5 \text{ G}$ (see note 11)	6.5	Code H	$E_p$	---	---	---	---	500	---	mVac

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP LEVEL OR CODE	SYMBOL	LIMITS						UNIT
						MIN	LAL	BOGEY	UAL	MAX	ALD	
	<u>Quality conformance inspection, part 2</u> (see note 5) -Continued											
1101	Secureness of base, cap, or insert		6.5	S3	---	---	---	---	---	---	---	---
1111	Base pin solder depth		6.5	S3	---	---	---	---	---	---	---	---
1041	Shock	450 G; Ehk = +450 Vdc; Ec = -7 Vdc; Rp = 2,000 ohms; Rk = 0 (see notes 9 and 12)	---	---	---	---	---	---	---	---	---	---
1031	Vibration fatigue	F = 50 to 500 Hz; 2.5 G; Ef = 6.3 V; no other voltages applied (see note 11, except t = 96 hours)	6.5	See note 13	---	---	---	---	---	---	---	---
---	Post-shock and vibration-fatigue-test end points	Low-frequency vibration	---	---	Ep	---	---	---	---	500	---	mVac
---		Heater-cathode leakage	---	---	Ihk	---	---	---	---	50	---	$\mu$ Adc
---		Transconductance (1)	---	---	$\Delta S_{mt}$	---	---	---	---	10	---	%
---		Total grid current	---	---	Ic	0	---	---	---	-1.5	---	$\mu$ Adc
1261	Electrode voltage (anode)	Rk = 0; Ec = 0; Eb/Ik = 200 mAdc	6.5	S3	Eb	---	---	50	---	70	---	Vdc
1131	Metallic base sleeve quality		---	---	---	---	---	---	---	---	---	---
1105	Permanence of marking		---	---	---	---	---	---	---	---	---	---

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN	MAX	
	<u>Quality conformance inspection, part 3</u> (see note 14)							
1508	Heater-cycling life	Ef = 7.5 V; Ehk = 300 Vac; Eb = Ec = 0; 1 min "on" 4 min "off"	---	---	---	---	---	---
---	Heater-cycling life-test end point	Heater-cathode leakage	---	---	Ihk	---	50	$\mu$ Adc
1516	Stability life	Eb = 150 Vdc; Ehk = 300 Vac; Rk/k = 400 ohms; TA = room (see note 6)	---	---	---	---	---	---
---	Stability life-test end point (1 hour)	Change in transconductance (1) of individual tubes	---	---	$\Delta S_{mt}$	---	10	%
1521	Survival-rate life	Stability life-test, or equivalent conditions	---	---	---	---	---	---

## MIL-E-1/1655

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN	MAX	
	<u>Quality conformance inspection, part 3 (see note 14)</u> -Continued							
---	Survival-rate life-test end points	Short and discontinuity detection	---	---	---	---	---	---
		Transconductance (1)	---	---	Sm	5,800	---	$\mu$ mos
1501	Intermittent life	Stability life-test conditions, TE = 300° C (min) (see notes 15, 16, and 17)	---	---	---	---	---	---
---	Intermittent life-test end points (1,000 hours)	Inoperatives	---	---	---	---	---	---
		Total grid current	---	---	Ic	0	-5	$\mu$ Adc
		Transconductance (2)	---	---	$\Delta$ Sm Ef	---	10	%
		Heater-cathode leakage	---	---	Ihk	---	25	$\mu$ Adc
		Heater current	---	---	If	2.35	2.75	A
		Change in transcon- ductance (1) of individual tubes	---	---	$\Delta$ Sm t	---	15	%
		Insulation of electrodes	---	---	---	---	---	---

## NOTES:

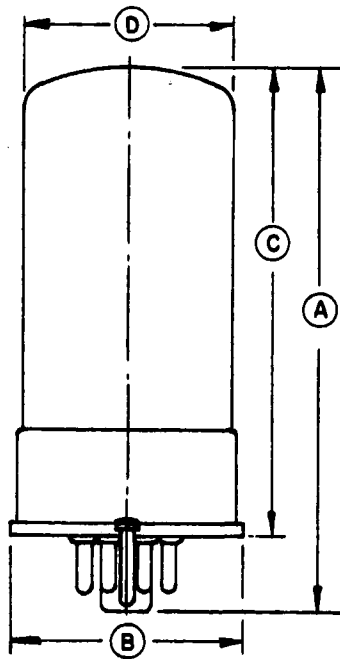
- See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage.
- Maximum grid-circuit resistance:
  - 1.0 megohm for cathode-bias operation.
  - 0.1 megohm for fixed-bias operation.
  - 0.1 megohm for combined fixed-and cathode-bias operation.
- For qualification, "Life-test data" shall apply with the following exception:

	Quantity	Acceptance No.
Intermittent life test of any sampling plan selected from MIL-STD-105 that assures a RFR of 5.2 percent (Pa = 10 percent) or less.	128	3

- The tube described by this TSS is a substitute for tube type 6080WB, MIL-E-1/1121.
- Sampling procedure shall be in accordance with MIL-STD-105 with sample size determined by lot size, except the minimum sample size shall be as specified below. Use the AQL and inspection level specified for each individual test item to determine the minimum sample size code letter. The maximum lot tolerance percent defectives (LTPD), specified below, are for information purposes and are defined as the percent defective in the lot for which the probability of acceptance is 0.10 as obtained from the operating characteristic curves in MIL-STD-105.

AQL (percent defective)	Inspection level	Maximum LTPD	Minimum sample size code
0.4	II	2.7	L
2.5	I	12.9	H

- Test each unit separately.
- Both units shall be operating.



Ltr	Dimensions in inches with metric equivalents (mm) in parentheses	
	Minimum	Maximum
Quality conformance inspection, part 1		
A		4.063 (103.20)
B		1.719 (43.66)
C	3.125 (79.38)	3.500 (88.90)
D	1.438 (36.53)	1.563 (39.70)

FIGURE 1. Outline drawing of electron tube type 6080WC.