

MIL-STD-1311B
 NOTICE 2
 17 November 1976

MILITARY STANDARD

TEST METHODS FOR ELECTRON TUBES

TO ALL HOLDERS OF MIL-STD-1311B

1. THE FOLLOWING PAGES OF MIL-STD-1311B HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED (changes are indicated by an asterisk in the margin):

<u>NEW PAGE</u>		<u>SUPERSEDED PAGE</u>	<u>DATE</u>
5	28 March 1975		Reprinted without change
6	_____	6	6 August 1975

NOTE: Test method 5246 is out of sequence (located following method 5437). Remove and sequence in appropriate location.

2. RETAIN THIS NOTICE PAGE AND INSERT BEFORE THE TABLE OF CONTENTS.

3. Holders of MIL-STD-1311B will verify that changes and additions indicated above have been entered. The notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or canceled.

Custodians:

Army - EL
 Navy - EC
 Air Force - 85

Review activities:

Army - MI, MU
 Air Force - 11, 17, 99
 DSA - ES

User activities:

Army - AV, ME, SM
 Navy - AS, OS, MC, CG
 Air Force - 19

Preparing activity:

Navy - EC

Agent:

DSA - ES

(Project 5960-3008)

4. GENERAL REQUIREMENTS

4.1 Numbering system. The test methods are designated by numbers assigned in accordance with the following system:

4.1.1 Category of tests. Each test method is designated by a four-digit number, with significance, assigned in accordance with the following criteria:

<u>(a) Category of tubes</u>	<u>Numerical series (first digit)</u>
General (tests applicable to more than one tube category) - - - - -	1000 to 1999
Receiving, transmitting, and power - - - - -	2000 to 2999
Cold cathode, corona and glow discharge voltage regulators, graphic indicator, ignitron pulse modulators, and thyratrons - - -	3000 to 3999
Crossed field, gas switching; klystrons, magnetrons, M-backward wave, O-type backward wave, and traveling-wave tubes - - -	4000 to 4999
Cathode ray, cathode-ray charge storage, phototubes, image orthicons, and vidicons - -	5000 to 5999
Radiation counter - - - - -	6000 to 6999

(b) Within the above series, numbers will be assigned as follows:

<u>Category of tests</u>	<u>Last three digits of series</u>
Environmental/Mechanical (physical) - - - - -	001 to 199
Electrical - - - - -	200 to 499
Life - - - - -	500 to 699

4.1.2 Revisions. Revisions to test methods will be indicated by a capital letter following the method number. For example, the first revision of method 1001 will be 1001A. Letters I and O will not be used.

4.2 Method of reference. Applicable test methods contained herein shall be referenced on the TSS by specifying the method number of this standard and details required by the method. Applicable methods shall be referenced without specifying a revision letter. Paragraph numbers within test methods shall not be referenced. If a particular paragraph(s) is applicable, the title shall be specified.

4.3 Order of precedence. Unless otherwise specified, in the event of conflict between this standard and the tube specification sheet (TSS), the latter shall govern. (See MIL-E-1, section 3, Order of precedence.)

4.3.1 When it is stated in any test method that a quantity is to be measured, it is implied that the measurement, after application of any necessary correction factors or calculations, is to be within the limits specified on the TSS, or herein. Consequently the words ". . . and shall be within the limits specified . . ." are frequently implied but not stated, to avoid constant repetition.

4.3.2 Where any specific value or limit for a parameter is stated herein, the TSS may specify a different value, for good reason; such value will automatically govern, in accordance with MIL-E-1 order of precedence provisions. Consequently the words ". . . or the specified value " are frequently implied but not stated, to avoid constant repetition. In the interests of standardization, TSS's should not adopt different values of such parameters without good reason.

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4.4 Obsolescent test methods. Test methods labelled "OBSCOLESCENT" are retained in this standard because they are specified on TSS's for a limited number of older tubes. Obsolescent methods shall not be specified on new TSS. If a similar measurement is required for new tube types, a new test method will be prepared under a different number, reflecting current practice. Obsolescent methods will be deleted from this standard when no further requirements exist.

4.5 Destructive tests. Tubes subjected to a destructive test (see MIL-E-1, section 3) shall not be delivered on the contract or order. The manufacturer has the option of using different or the same sample tubes when more than one destructive test is required. Tubes subjected to deteriorating tests, such as the environmental, physical, or life tests, which have electrical tests specified as end-point limits, shall conform to the initial limits for those electrical tests, prior to being subjected to deteriorating tests.

4.6 Alternate test methods. An alternate test method may be substituted for a method specified herein provided it is demonstrated to the qualifying Government activity that there is adequate correlation between the results of the manufacturer's test method and the test method specified herein, and provided that such substitution in no manner relaxes the requirements of MIL-E-1 and this standard. The schematic diagrams and description of the test equipment to be used, shall be made available for review by the qualifying activity.

4.7 Additional testing. The manufacturer may make such additional tests as he may deem necessary to insure proper control of his product.

4.8 General test conditions.

4.8.1 Order of testing. Quality conformance inspection tests may be conducted in any order, at the discretion of the manufacturer. For qualification testing (QA), the following tests, when specified, shall be performed after all other tests in any sequence; bump, emission, pulse cathode current, rough handling (formerly drop test), shock, and vibration.

4.8.2 Ambient conditions. Unless otherwise specified, test temperature, relative humidity, and atmospheric pressure conditions shall be in accordance with GENERAL REQUIREMENTS of MIL-STD-202.

4.8.3 Calibration of measuring and test equipment. Calibration and certification procedures for standards and instruments used to test and measure completely assembled electron tubes procured in accordance with MIL-E-1, shall be as specified in MIL-C-45662. In addition, the following requirements shall apply:

- (a) The accuracy of a calibrating instrument shall be at least four times greater than that of the item being calibrated.
- (b) Calibration intervals shall be established on the basis of stability, purpose, and degree of usage for the standards and instruments and shall not exceed a 1-year interval except as indicated below. Intervals shall be shortened as required to assure continued accuracy, as evidenced by the results of preceding calibrations, and may be lengthened only when the results of previous calibrations provide definite indications that such action will not adversely effect the accuracy of the system. The individual changes shall be approved by the qualifying activity.

* 4.8.4 Accuracy of measurements. The specified limits are for values obtained with the specified test conditions and measuring equipment of accuracy consistent with general industry practice and calibrated in accordance with MIL-C-45662. Allowances are made for normal distribution and measuring instrument accuracy in establishing test specification sheet test conditions and test limits. Accuracy of measurements shall be appropriate to the test parameter(s) being measured and specific point instrument calibrations may be utilized when better accuracy than that specified and maintained for the basic measuring instrument is desired.

4.8.5 Holding periods. After completion of all manufacturing processes and tests, tubes shall be held nonoperating for minimum periods, as specified below (tube categories not listed below shall be held for a minimum period of 24 hours). Tests required to be performed after the holding period are designated on the TSS by a note. These tests shall be the first conducted after the holding period. Other required tests may be made before or after the holding period at the manufacturer's option.