

INCH-POUND

MIL-O-52374E

10 January 2013

SUPERSEDING

MIL-O-52374D

7 November 2006

MILITARY SPECIFICATION

INACTIVE FOR NEW DESIGN
after 5 October 1990

OSCILLATOR: HIGH VOLTAGE GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers the general requirements for a transistorized, high-voltage, oscillator.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-1/1049 - Electron Tube, Image Converter, Type 6914.
- MIL-PRF-27 - Transformers and Inductors (Audio, Power, and High-Power Pulse), General Specification for.
- MIL-PRF-19500 - Semiconductor Devices, General Specification for.
- MIL-PRF-23586 - Sealing Compound (with Accelerator), Silicone Rubber, Electrical.

Comments, suggestions or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, or emailed to CircuitProtect@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

MIL-O-52374E

- [MIL-PRF-39003](#) - Capacitors, Fixed, Electrolytic (Solid Electrolyte), Tantalum, Established Reliability, General Specification for.
- [MIL-PRF-39014](#) - Capacitor, Fixed, Ceramic Dielectric (General Purpose), Established Reliability and Non-Established Reliability, General Specification for.
- [MIL-PRF-39017](#) - Resistors, Fixed, Film (insulated), Nonestablished Reliability, and Established Reliability, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

- [MIL-STD-130](#) - Identification Marking of U.S. Military Property.
- [MIL-STD-202](#) - Electronic and Electrical Component Parts.
- [MIL-STD-889](#) - Dissimilar Metals.
- [MIL-STD-1916](#) - DoD Preferred Methods for Acceptance of Product.

DEPARTMENT OF DEFENSE HANDBOOKS

- [MIL-HDBK-781](#) - Reliability Test Methods, Plans, and Environments for Engineering Development, Qualification and Production.

(Copies of these documents are available online at <https://assist.dla.mil/quicksearch/> or <https://assist.dla.mil/> or from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of this document are that cited in the solicitation or contract.

SOCIETY OF AUTOMOTIVE ENGINEERS

- [SAE-AMS-QQ-N-290](#) - Nickel Plating (Electrodeposited).

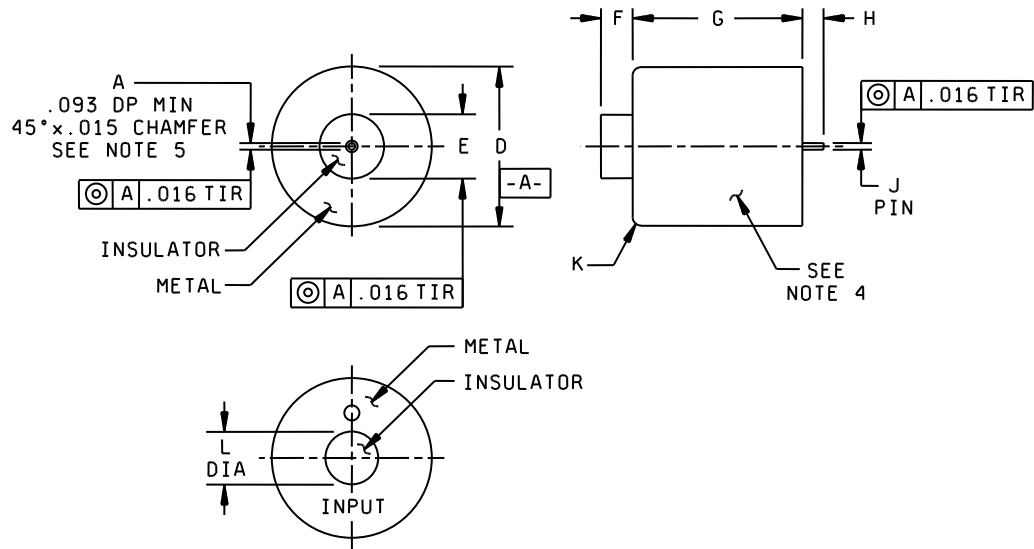
(Copies of this document is available online at <http://www.sae.org/> or from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The high-voltage oscillator, hereinafter called the oscillator, shall be a solid-state, electronic device for converting 6.75 volts dc (V dc) input to 2,700 volt ac peak-to-peak output at a frequency of 1.2 to 2.0 kilohertz (kHz) and shall conform to [figure 1](#) and as specified herein.

MIL-O-52374E



Ltr	Inches		Millimeters	
	Min	Max	Min	Max
A	.038	.043	0.97	1.09
D	.932	.942	23.55	23.67
E	.370	.380	9.40	9.65
F	.182	.192	4.62	4.88
G	.985	1.015	25.31	25.78
H	.120	.130	3.05	3.30
J	.039	.041	0.99	1.04
K	.010	.100	0.25	2.54
L	.307	.317	7.80	8.05

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Permanently mark terminal information as shown.
4. Permanently mark identification, serial number, contract number.
5. Socket to hold .038 diameter, .090 LG PIN, with a 4 ounce minimum pull.
6. Socket to be flush with insulator.
7. Socket to be solid (as opposed to slotted).
8. Exposed metal housing to be nickel plated and shall be the negative contact.

FIGURE 1 High voltage oscillator.

3.2 First article. Unless otherwise specified in the contract or purchase order, samples shall be subjected to first article inspection (see 4.2 and 6.4).

3.3 Materials and components. Materials and components shall be as specified herein. Materials and components not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Insulating material. The interior circuitry of the oscillator shall be encapsulated in sealing compound conforming to MIL-PRF-23586.

3.3.2 Housing material. Housing material shall be copper-flashed steel and shall be nickel plated in accordance with type III, class 1 of SAE-AMS-QQ-N-290.

3.3.3 Components.

3.3.3.1 Resistors. Resistors shall conform to MIL-PRF-39017 or equivalent resistors which meet the requirements of this specification.

3.3.3.2 Capacitors. Tantalum capacitors shall conform to MIL-PRF-39003. Ceramic capacitors shall conform to MIL-PRF-39014.

3.3.3.3 Semiconductors. Transistors and diodes shall conform to MIL-PRF-19500.

3.3.3.4 Transformers. Transformers shall conform to MIL-PRF-27.

3.3.4 Lead materials and finishes. Lead or terminal material and finishes shall be used that enables the oscillator to meet all of the requirements of this specification. For further guidance on lead finishes (see 6.5.)

3.3.5 Metals. All metals used in the construction of the oscillators covered by this specification shall be corrosion resistant or protectively treated to resist corrosion in consonance with the performance requirements specified herein. When dissimilar metals are used in contact with each other, protection against electrolysis and corrosion shall be provided. Metal plating or metal spraying of dissimilar base metals to provide similar or suitable abutting surfaces is permitted. Dissimilar metals are defined in MIL-STD-889.

3.3.6 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Pure tin. The use of pure tin, as an underplate or final finish, is prohibited both internally and externally. Tin content of (product) and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.5).

3.5 Dimensions and weight.

3.5.1 Dimensions. Dimensions shall be as shown on figure 1 and as specified herein.

3.5.2 Weight. The oscillator shall not exceed 1.75 ounces total weight.

3.6 Burn-in. Each oscillator shall be operated with an input of 6.75 V dc for 100 hours.

3.7 Normal operation. With an input current of 20 milliamperes (mA) maximum and instantaneous peaks not greater than 60 mA, the oscillator shall not be damaged, (see 6.3.1) and shall meet the specified output voltages of table I under all conditions specified in table I.

TABLE I. Output voltages.

DC input voltage	DC output load	Total capacitance of output load performance in picofarads (pF)	AC output voltage volts peak-to-peak
6.75	No load (see 6.3.2)	25	2,700 $\pm$ 100
6.75	No load	15	2,700 $\pm$ 100
6.75	Full load (see 6.3.3)	55	2,700 +100 -150
6.75	Overload (see 6.3.4)	25	2,700 +100 -200
6.00	Full load	55	2,700 +100 -150

3.8 Environmental temperature. The oscillator shall not be damaged by storage, operation, thermal shock or humidity and shall meet specified operational requirements under the following conditions (see figure 2).

- | | |
|------------------|---|
| a. Storage | At +68°C for 2 hours and at -54°C for 2 hours. |
| b. Operation | With an input current of 20 mA maximum and instantaneous peaks not greater than 60 mA, an output frequency of 1.2 to 2.0 kHz and at temperatures from +52°C to -54°C with atmospheric pressures from 30 to 20 inches of mercury and under all load and input conditions specified in TABLE I. |
| c. Thermal shock | From +52°C to room temperature (see 6.3.5) and from -54°C to room temperature. |
| d. Humidity | A 90 to 98 percent relative humidity at temperatures from +30°C to +50°C (see figure 3). |

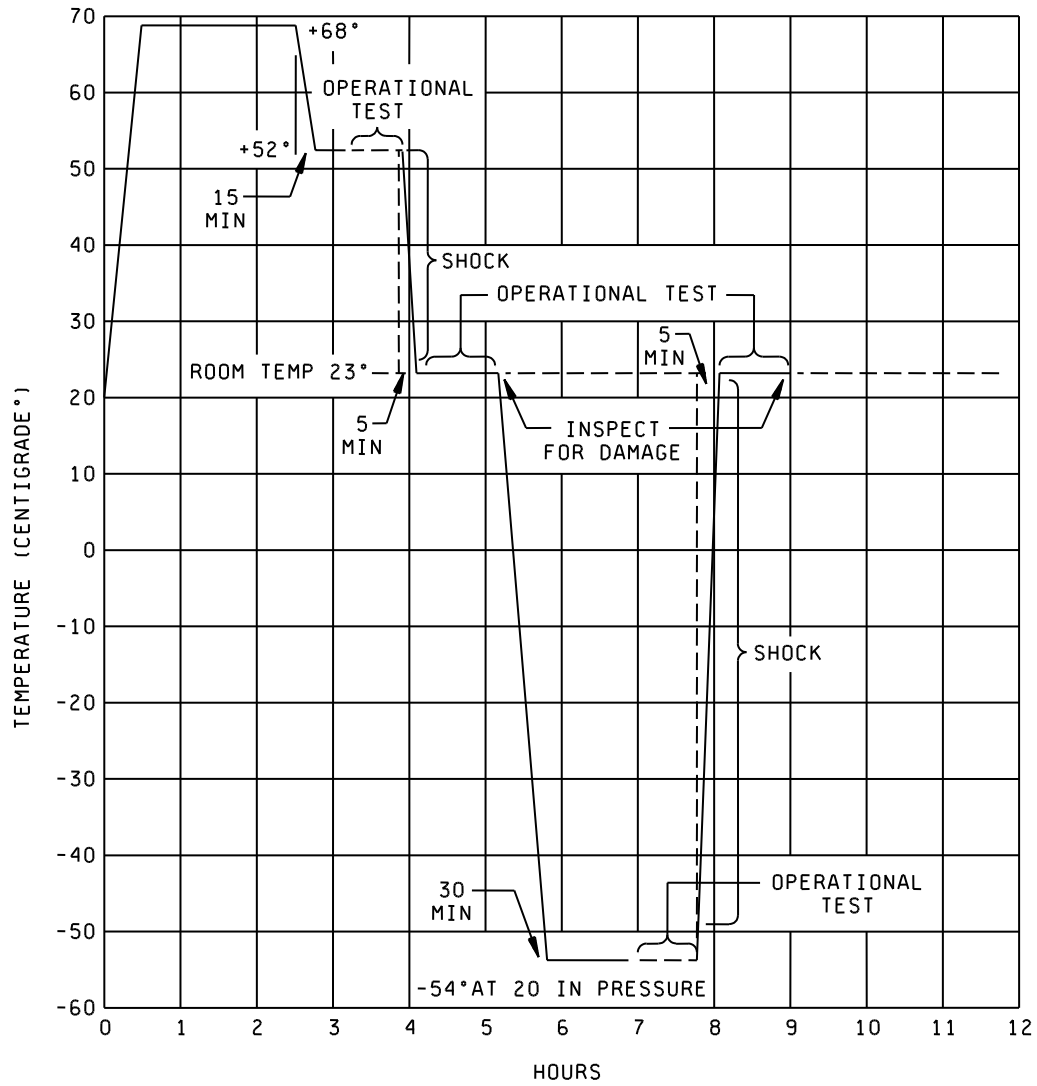


FIGURE 2 Environmental cycle H.V. oscillator.

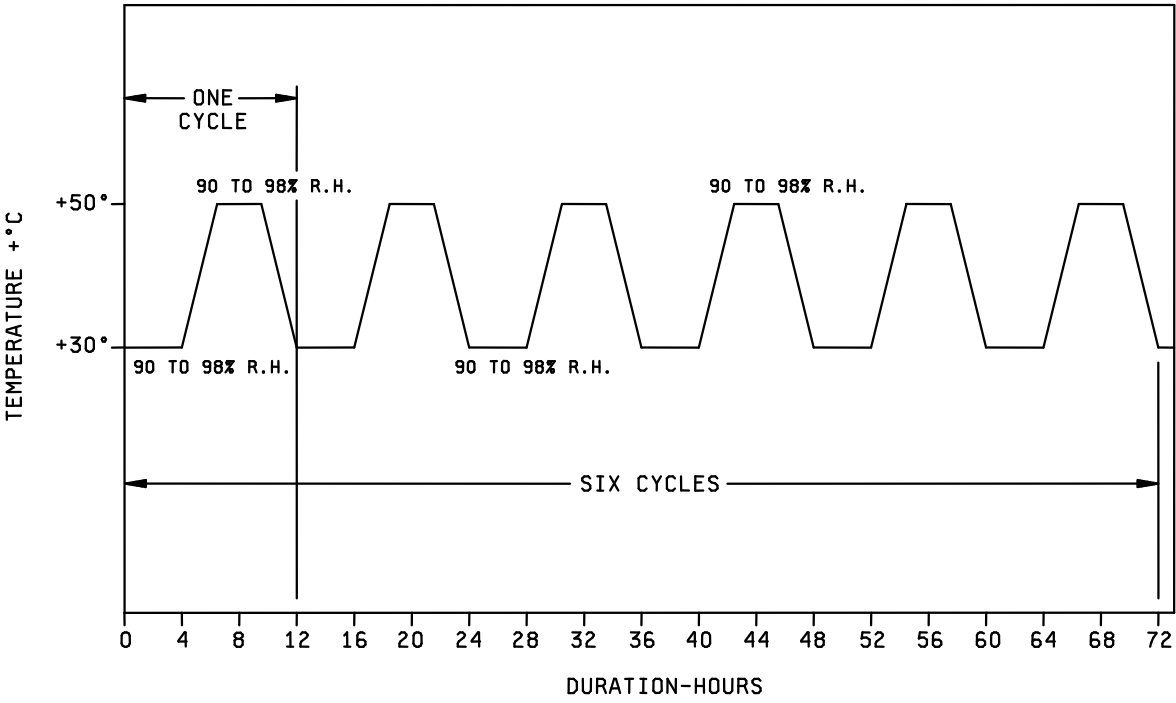


FIGURE 3. Relative humidity test cycles.

3.9 Shock. While operating with 6.75 V dc input, no load on the output and a total capacitive load of 25 pF, the oscillator shall not be damaged and shall produce an output voltage of 2,700 volts peak-to-peak ± 100 volts when subjected to six 100g (see 6.3.6) shocks applied to each of three mutually perpendicular directions. The shock impacts shall be nominal half sine wave pulses having a minimum of 100 g's at peak amplitude. The duration of each shock pulse shall be 6 milliseconds ± 2 milliseconds measured between the 10 percent values of the peak amplitude. The energy under the shock curve shall be not less than 0.25 g-second and the after oscillations shall be not greater than 15 percent of the peak amplitude of the nominal half sine wave pulse.

3.10 Vibration. The oscillator shall not be damaged and shall meet the requirements of 4.4.6 after being rigidly mounted, singly or in groups, and vibrated with simple harmonic motion in three mutually perpendicular planes over a frequency range of 10 to 55 Hz with an amplitude of .10 inch total excursion for 10 minutes in each plane. There shall be no voltage applied to the oscillator during the vibration.

3.11 Rise time. The oscillator shall start and reach steady state (see 6.3.7) conditions within 5 seconds under the following conditions.

- a. An input voltage of 6.00 V dc and 6.75 V dc.
- b. Full load.
- c. A total capacitive load of 55 pF.
- d. At an ambient temperature between +52°C and -54°C.

3.12 Noise level. The oscillator noise shall be not greater than 40 decibels when measured at a maximum distance of one inch from the oscillator while operating. (Reference level for noise measurements: 1,000 Hz sound wave having an intensity of 20 micronewtons per square meter.)

3.13 Stray field. With an input voltage of 6.75 V dc, and the output at full load and 55 pF, the oscillator stray field (see 6.3.8) shall be not greater than one gauss when measured at a maximum distance of one half inch from the oscillator.

3.14 Operation safety.

- a. The oscillator, with open circuit, shall not be damaged when subjected to a reverse polarity input voltage of 6.75 V dc for 1 minute:
 - (1) Short circuited (see 6.3.9) for 1 minute.
 - (2) Open circuited (see 6.3.10) for 5 minutes.
 - (3) Full load for 1 hour.

3.15 High voltage output socket. The high voltage output socket of the oscillator shall not be damaged when tested in accordance with 4.4.11.

3.16 Mean time between failure. The oscillators shall exhibit a specified mean time between failure (MTFB) of 4,000 hours.

3.17 Identification markings. The oscillator shall be identified in accordance with MIL-STD-130 and as shown in figure 1.

3.18 Workmanship. The oscillator shall be free of burrs, sharp edges, chips, blisters, corrosion, scratches, mars, or other defects. The oscillator shall be free of grease, oil, dirt, dust, flux or other foreign material. The processes of fabrication and testing shall not deteriorate the characteristics or oscillator performance, material or appearance.

4. VERIFICATION

4.1 Classification of inspection. Inspection shall be classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article inspection. First article inspection shall be performed on sample units which have been produced with equipment and procedures normally used in production. The manufacturer shall provide verification to the acquiring activity that the first article inspection has been performed on the samples supplied to the requirements of this specification.

4.2.1 Sample size. Ten oscillators, high voltage, shall be subjected to first article inspection.

4.2.2 Inspection routine. The samples shall be subjected to the inspections as specified in table II and table III.

4.2.3 Failure. One or more failures of first article examination or tests shall be cause for rejection.

TABLE II. Examination.

Defect	Requirement paragraph
Material not as specified	3.3
Dimensions not as specified	3.5.1
Weight not as specified	3.5.2
Identification marking not as specified	3.17
Workmanship not as specified	3.18

TABLE III. Test schedule.

Test	Requirement paragraph	Test paragraph
Burn-in	3.6	4.4.2
Normal operation	3.7	4.4.3
Rise time	3.11	4.4.7
Operational safety	3.14	4.4.10
Noise level	3.12	4.4.8
Stray field	3.13	4.4.9
Environmental temperature	3.8	4.4.4
Shock	3.9	4.4.5
Vibration	3.10	4.4.6
High voltage output socket	3.15	4.4.11
Mean time between failure	3.16	4.4.12

4.3 Conformance inspection.

4.3.1 Inspection lot. Unless otherwise specified in the contract or purchase order, for purposes of inspection a lot shall be as defined in [MIL-STD-1916](#).

4.3.2 Sampling. Samples shall be selected in accordance with [MIL-STD-1916](#). Verification Level (VL) shall be II (VL = II).

4.3.3 Examination. The oscillators shall be examined in accordance with [table II](#). Presence of one or more defects shall be cause for rejection.

4.3.4 Tests. Tests in [table IV](#) and [table VI](#) shall be conducted in the order listed. Tests in [table V](#) may be conducted in any sequence.

4.3.4.1 Group "A" individual tests. Each oscillator shall be subjected to the tests in [table IV](#). Failure of any test shall be cause for rejection.

TABLE IV. Group "A" test schedule.

Test	Requirement paragraph	Test paragraph
Burn-in	3.6	4.4.2
Normal operation	3.7	4.4.3

4.3.4.2 Group "B" samples. Samples selected in accordance with 4.3.2 and which have passed the tests specified in [4.3.4.1](#) shall be subjected to the tests in [table V](#).

TABLE V. Group "B" test schedule.

Test	Requirement paragraph	Test paragraph
Rise time	3.11	4.4.7
Noise level	3.12	4.4.8
Stray field	3.13	4.4.9
Shock	3.9	4.4.5
Vibration	3.10	4.4.6

4.3.4.3 Group "C" special sampling. This inspection shall consist of the tests specified in [table VI](#) and shall be performed on sample units that have been subjected to and passed the tests in [4.3.4.1](#).

TABLE VI. Group "C" special sampling.

Test	Requirement paragraph	Test paragraph
Environmental temperature	3.8	4.4.4
Operational safety	3.14	4.4.10
High voltage output socket	3.15	4.4.11
Mean time between failure	3.16	4.4.12

4.3.4.3.1 Sampling for inspection. Three (3) sample units shall be selected at random for inspections in table VI, except for MTBF, from every 100 produced or every 30 days, whichever occurs first. A minimum of ten (10) units shall be tested for MTBF (see [4.4.12](#)) selected from oscillators which have met the requirements of group A, [table IV](#). The first samples selected shall be at the start of the contract from the first conformance inspection production lot (see [4.3.4.3](#)).

4.3.4.3.2 Noncompliance. The contractor shall immediately report in writing each group C failure occurrence, including details of the failure and characteristics affected. The contractor shall immediately investigate the cause of failure and report the results of the investigation. As soon as practicable the contractor shall report on details of the proposed corrective action on (a) the processes and materials, as applicable, and (b) all oscillators which were manufactured under the same conditions, and which may be considered subject to the same failure. Reports shall be made to the responsible technical activity designated in the contract or purchase order through the Government Quality Assurance Representative. After corrective action has been taken an additional sample equal in size to the first sample shall be subjected to the special sampling inspection (all inspections or the inspection which the sample failed, at the option of the Government). Final acceptance and shipment will be withheld until the special sampling reinspection results have shown that the corrective action is effective.

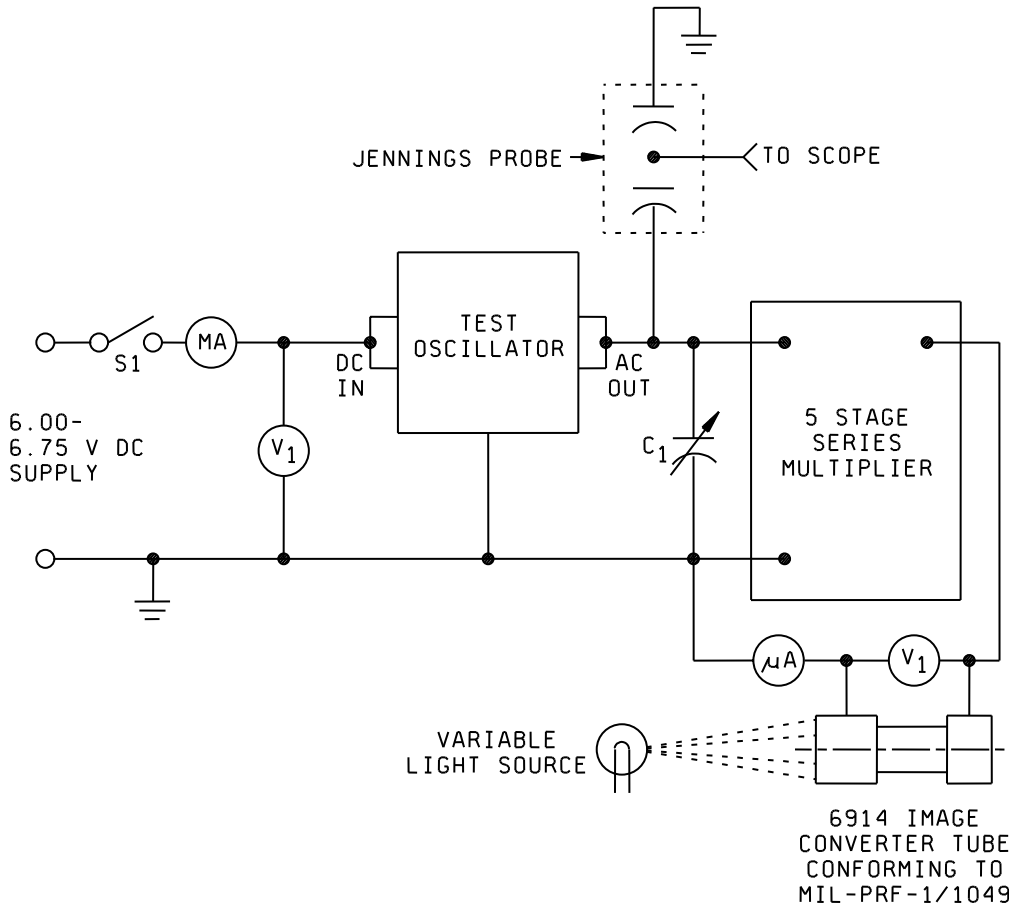
4.3.5 Reinspection of conforming group C sample unit. Unless otherwise specified, sample units which have been subjected to and passed Group C inspection may be accepted on the contract or order provided all damage is repaired and the sample units are resubjected to and pass group A inspection.

4.4 Inspection procedures.

4.4.1 Test conditions. Tests shall be conducted in accordance with the test procedures specified herein. Unless otherwise specified in the test procedures test conditions shall be as follows:

- a. The oscillator shall be connected to the test circuit as shown in [figure 4](#). Note that a 6914 Image Converter Tube conforming to [MIL-PRF-1/1049](#) shall be used.
- b. Input voltage to the oscillator shall be 6.00 and 6.75 ± 0.025 V dc.
- c. Output voltage is the voltage measured across C_1 in [figure 4](#).
- d. Total capacitance of the load (Multiplier, the Jennings Probe and stray wire) shall be 15 pF maximum.
- e. No load.
- f. Environmental chambers used for tests shall maintain the specified temperature within $\pm 2^\circ\text{C}$ and the relative humidity within ± 5 percent.
- g. S_1 (see [figure 4](#)) closed.
- h. All tests shall be conducted at room temperature.

- i. All meters used during tests shall have been calibrated within 30 days of the start of testing, and thereafter as required and at intervals not to exceed 6 months. All meters shall be accurate within 1.0 percent of full scale reading, except the meter used to measure V_1 which shall be accurate within 0.5 percent of full scale reading.



NOTES:

1. C_1 Approximately 40 pF nominal, select for 55 pF total load on oscillator.
2. Multiplier to apply not more than 16 kV to the image converter tube.
3. Capacitors used in the multiplier doubler circuit shall have a minimum capacitance of 1,000 pF.

FIGURE 4. Oscillator test circuit.

4.4.2 Burn-in. Operate the oscillator continuously with a 25 pF load applied for 100 hours. Failure of any oscillator to operate for 100 hours continuously shall constitute failure of this test.

4.4.3 Normal operation. Connect the oscillator to the circuit shown in [figure 4](#). Operate the oscillator under all load and input conditions specified in table I. Failure to meet the requirements of [3.7](#) shall constitute failure of this test.

4.4.4 Environmental temperature. Place the oscillator in a test chamber and gradually, in not less than 30 minutes, raise the temperature to +68°C and hold at the temperature for a minimum of 2 hours. At the end of this 2 hour period, gradually in not less than 15 minutes, lower the chamber temperature to +52°C and hold at this temperature for a minimum of 30 minutes. At the end of this period, operate the oscillator with a total capacitive load of 25 pF. Measure the input current, (mA) (see [figure 4](#)), output voltage and of 25 pF. Measure the input current, (mA) (see [figure 4](#)), output voltage and output frequency and record these values. Repeat the above procedure with total output frequency and record these values. Repeat the above procedure with total capacitive loads of 15 pF (no load) and 55 pF (full load). Remove the oscillator from the chamber to room temperature and hold at this temperature while operating for not less than one hour. Monitor and record the output voltage. After recording the voltage, inspect for damage. Replace the oscillator in the chamber and gradually, in not less than 30 minutes, reduce the chamber temperature to -54°C and hold at this temperature for two hour. During the final hour of this period, reduce the atmospheric pressure to 20 inches of mercury and repeat the tests specified above that were performed at +52°C. At the conclusion of these tests increase the atmospheric pressure to 30 inches of mercury, remove the oscillator from the chamber and hold, while operating at room temperature for not less than one hour. Monitor and record the output voltage and inspect the oscillator for damage. Failure to meet the requirements of [3.8](#), or evidence of damage or at the conclusion of the above testing shall constitute failure of this test.

4.4.4.1 Humidity. Place the oscillator in a chamber with an internal temperature of +30°C and a relative humidity of 90 to 98 percent and soak for 4 hours. Raise the temperature of the chamber to +50°C in not more than 2 hours. Maintain the relative humidity of 90 to 98 percent and soak for 4 hours. Lower the temperature of the chamber to +30°C in not more than 2 hours. This constitutes one complete cycle as shown in [figure 3](#). Perform the above cycle six times. At the conclusion of the 6 cycles operate the oscillator with 6.75 V dc input and a 25 pF load across the output. Failure to produce an output of 2,700 ±100 volts or evidence of damage shall constitute failure of this test.

4.4.5 Shock. Test the oscillator in accordance with test condition C, method 213 of [MIL-STD-202](#). Mount the oscillator securely to the shock testing apparatus. While the oscillator is operating subject the oscillator to six 100 g shock impulses applied in each of three mutually perpendicular directions. Monitor the output voltage before, during and after the application of the shock pulses. Inspect for damage. Failure to meet the requirements of [3.9](#) shall constitute failure or this test.

4.4.6 Vibration. Secure the oscillator to the vibration table. Vibrate the oscillator with simple harmonic motion in three mutually perpendicular planes over a frequency range of 10 to 55 Hz with an amplitude of .10 inch total excursion. In 1 minute vary the frequency from 10 Hz to 55 Hz and return to 10 Hz. Repeat this frequency sweep 10 times. Failure to meet the requirements of [3.10](#) shall constitute failure of this test.

4.4.7 Rise time. Place the oscillator in the environmental chamber and adjust the temperature to +52°C. Hold at this temperature for 30 minutes. With a total capacitive load of 55 pF adjust the light source (see [figure 4](#)) for full load condition. Open S_1 and discharge (short V_2) the multiplier completely. Close S_1 and adjust power supply to 6.75 V dc and measure the rise time and input current required for the oscillator to start and reach steady-state condition. Repeat the above procedure at -54°C and a 6.0 volt input. Failure to meet the requirements of [3.11](#) shall constitute failure of this test.

MIL-O-52374E

4.4.8 Noise level. Operate the oscillator intermittently at full load and 55 pF and measure the oscillator noise level at a distance of one inch from the oscillator. Failure to meet the requirements of 3.12 shall constitute failure of this test.

4.4.9 Stray field. Energize the oscillator with 6.75 V dc. Apply the full load and 55 pF. Measure the magnetic stray field at a distance of one-half inch from the oscillator. Failure to meet the requirements of 3.13 shall constitute failure of this test.

4.4.10 Operational safety. Apply a reverse polarity of 6.75 V dc input to the oscillator for not less than one minute with an open circuit on the oscillator output. Disconnect the input voltage and inspect the oscillator for damage. Repeat the above procedure with a normal polarity input and a short circuit on the oscillator output. Remove the short circuit and allow the oscillator to operate for 5 minutes with an open circuit on the oscillator output. Inspect for damage. Connect the oscillator to the test circuit shown in figure 4 with a total capacitive load of 55 pF using a BA-1100/U battery or equivalent (see 6.6 for further information), for the input voltage. Operate the oscillator under full load conditions for not less than one hour and monitor input current and ac output voltage. Failure to meet the requirements of 3.14 shall constitute failure of this test.

4.4.11 High voltage output socket (see 3.15). The output socket shall be mated with a maximum .085 $\pm$.005 inch length and .038 $\pm$.001 inch diameter pin 500 times. Failure of the socket to require a minimum extracting pull of 4 ounces from the pin at the end of the test or evidence of damage to the socket shall constitute failure of this test.

4.4.12 Mean time between failure. Oscillator MTBF testing shall be performed each 30 days on sample oscillators selected at random from the previous 30 day production period. The sample size shall be a minimum quantity of 10. For first article testing, no replacements are permitted. For production testing, replacement of failed oscillators is required. Sample oscillators selected for testing shall be selected from lots which have passed the conformance inspection of 4.3.3 and 4.3.4.1. An operating potential of 6.75 V dc shall be applied and the output load shall be 55 pF. The oscillators shall be operated intermittently as follows:

- | | |
|-------------|------------|
| a. On time | 55 minutes |
| b. Off time | 5 minutes |

The total number of operating hours for all units, failed and unfailed, original and replacement shall be monitored and recorded. Once each 96 hours, monitor the output voltage. Failure of an oscillator to produce an output of 2,700 $\pm$ 100 -150 volts peak-to-peak shall constitute oscillator failure. Time to failure for any oscillator failing any test shall be computed to the beginning of the 96 hour period during which the failure occurred. It is recommended that MIL-HDBK-781, Test Plan IV-D be used as guidance in accomplishing this test. In the event of failure of this test, 4.3.4.3.2 shall apply.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Services or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contracting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The oscillator is intended to be used to provide a high voltage ac input to the multiplier section of an image intensifier assembly of a night vision system.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Packaging requirements (see 5.1).
- c. If special or other identification marking if required (see 3.17).

6.3 Definitions.

6.3.1 Damage. Damage is defined as:

- a. Electrical failure of malfunctioning, including arcing and corona.
- b. Cracks, breakages, deformation, corrosion, or deterioration of finish.
- c. Flashing or flickering of the output wave shape.

6.3.2 No load. The condition of no radiation incident on the photocathode of the image converter with the converter energized.

6.3.3 Full load. With the image converter energized, the amount of radiation on the photocathode is adjusted to produce 35 milliwatts of power in the image converter, ($V \times A = 35$ milliwatts) (see figure 4).

6.3.4 Overload. With the image converter energized, the amount of radiation on the photocathode is adjusted to produce 50 milliwatts of power in the image converter, ($V \times A = 50$ milliwatts) (see figure 4).

6.3.5 Room temperature. Room temperature is defined as $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$.

6.3.6 "g". "g" is acceleration or deceleration of 32.17 feet per second per second caused by the force of gravity.

6.3.7 Steady state. The condition in which circuit values remain essentially constant, after initial transient or fluctuating conditions have disappeared.

6.3.8 Stray field. The leakage magnetic flux that spreads outward from an inductor and does no useful work.

6.3.9 Short circuit. Short circuit is the condition of a direct short circuit applied between case ground and the output terminal of the oscillator.

6.3.10 Open circuit. Open circuit is the condition of no external load applied to the output terminals of the oscillator.

6.4 First article inspection. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspections as to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.5 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to [ASTM-B545](#) (Standard Specification for Electrodeposited Coatings of Tin).

6.6 Test circuit input voltage. The BA-1100/U battery has been used successfully as the input voltage source for the test circuit of [figure 4](#), and has a nominal voltage of 6.5 volts.

6.7 Subject term (key word) listing.

Burn-in
Electron tube
First article
Operational safety
Stray field

6.8 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of the materials on the list should be minimized or eliminated unless needed to meet the requirements specified herein (see section [3](#)).

6.9 Changes from previous issue. 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.

Custodians:
Army - CR
Navy - OS
DLA - CC

Preparing activity:
DLA - CC

(Project 5855-2012-002)

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 <https://assist.dla.mil>.