Downloaded from http://www.everyspec.com

INCH-POUND
MIL-PRF-15305E
AMENDMENT 7
17 August 1998
SUPERSEDING
AMENDMENT 6
10 May 1997

PERFORMANCE SPECIFICATION

COILS, FIXED AND VARIABLE, RADIO FREQUENCY
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-C-15305E, dated 17 July 1979, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

Title, delete and substitute:

"COILS, ELECTRICAL, FIXED AND VARIABLE, RADIO FREQUENCY
GENERAL SPECIFICATION FOR"

PAGE 2

2.1, SPECIFICATIONS, FEDERAL, delete.

2.1, SPECIFICATIONS, MILITARY, delete.

2.1, STANDARDS, MILITARY, delete:

"MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-454 - Standard General Requirements for Electronic Equipment."

Following 2.1, add:

"2.1.1 Non-Government publications The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/NCSL Z540-1 - Calibration Laboratories and Measuring Equipment-General Requirements.

INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

ISO 10012-1 - Quality Assurance Requirements for Measuring Equipment-Part 1: Metrological Confirmation System for Measuring Equipment.

(Application for copies should be addressed to the American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036.)

DISTRIBUTION STATEMENT A Approved for public release; distribution is unlimited.

Downloaded from http://www.everyspec.com

"2.2 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."

PAGE 3

3.3, delete.

3.3.1, delete.

3.4.1, delete.

3.4.6, 3.4.6.1, delete.

3.4.7, delete and substitute:

"3.4.7 Solder and solder flux. Solder and solder flux shall be of such a quality as to enable the coil to meet all requirements of this specification. In addition, solder shall have a liquidus melting point greater than +270°C."

PAGE 4

3.5.2.1, delete and substitute:

"3.5.2.1 Solderable/weldable leads. Unless otherwise specified (see 3.1), the manufacturer shall verify that the leads conform to one of the solderable/weldable lead types of MIL-STD-1276 or an approved equivalent."

* 3.7, Delete.

* 3.8, Delete.

* 3.9, Delete.

PAGE 5

3.15, delete and substitute:

"3.15 Resistance to soldering heat. When coils are tested as specified in 4.8.11, there shall be no evidence of mechanical damage, loosening of terminals, or solder reflow as evidenced by solder flowing from the body. Pretest and posttest X-ray inspection at 10X shall be required."

3.21, delete.

3.23, delete and substitute:

"3.23 Fungus. All external materials shall be nonnutrient to fungus growth or shall be suitably treated to retard fungus growth. The manufacturer shall verify by certification that all external materials are fungus resistant or shall test the coils as specified in 4.8.19. There shall be no evidence of fungus growth on the external surfaces."

PAGE 6

Following 3.27.3, add:

"3.27.4 Laser marking (cylindrical coils) At the option of the manufacturer, cylindrical coils may be laser marked. The marking shall be legible after all tests and, as a minimum, contain the manufacturer's name or source code, inductance value, tolerance, and date code."

Downloaded from http://www.everyspec.com

3.28, delete and substitute:

"3.28 Workmanship. Coils shall be processed in such a manner as to be uniform in quality and free of defects that will affect function, life, or serviceability."

PAGE 7

4.1, delete.

4.1.1, last sentence, delete "MIL-STD-45662" and substitute "ANSI/NCSL Z540-1, ISO 10012-1, or equivalent system as approved by the qualifying activity."

4.2a, delete.

4.2c, delete.

PAGE 8

4.5.4, delete and substitute:

"4.5.4 Retention of qualification. To retain qualification, every 12 months, the manufacturer shall verify to the qualifying activity the following:

a. Design of the coils have not changed.

b. Verification that group A and group B inspections have been performed on inspection lots supplied to the requirements of this specification.

c. The manufacturer retains the capability to manufacture and test coils to this specification.

In the event that no production has occurred in this period, the manufacturer shall verify to the qualifying activity that capability to manufacture and test the Qualified Products List (QPL) coil still exists and that the manufacturer wants to remain on the QPL."

PAGE 9

* TABLE IV, group I, Dielectric withstanding voltage, Insulation resistance and Barometric pressure, delete.

TABLE IV, group II, Terminal strength, delete.

TABLE IV, group II, Electrical characteristics (final), delete "3.8 and 4.8.4" and substitute "3.12 and 4.8.8".

TABLE IV, group II, Inductance, delete "3.8.1 and 4.8.4.1" and substitute "3.12.1 and 4.8.8.1".

TABLE IV, group II, Q, delete "3.8.2 and 4.8.4.2" and substitute "3.12.2 and 4.8.8.2".

TABLE IV, group IV, Immersion, delete.

TABLE IV, group IV, line 5, delete, "Moisutre" and substitute "Moisture".

TABLE IV, group IV, Electrical characteristics (final), delete "3.8 and 4.8.4" and substitute "3.12 and 4.8.8".

TABLE IV, group VI, Resistance to solvents, number of sample units, delete "3" and substitute "4".

PAGE 10

4.6, delete.

4.6.1, 4.6.2, 4.6.3, delete.

Downloaded from http://www.everyspec.com

4.7.1, add the following after the last sentence.

"Group B inspection for preparation for delivery is not required when the qualifying activity has allowed group B testing to be performed annually (see table VI)."

4.7.1.2.1, delete and substitute:

"4.7.1.2.1 Sampling plan. A sample of parts shall be randomly selected from each inspection lot in accordance with table V-1. If one or more defects are found, the lot shall be rescreened and defects removed. After screening and removal of defects, a new sample of parts shall be randomly selected in accordance with table V-1. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification."

After paragraph 4.7.1.2.1, add:

TABLE V-1. Sampling plan.

Lot size	Group A	Group B
1 to 5	100 percent	100 percent
6 to 13	100 percent	5
14 to 50	13	5
51 to 90	13	7
91 to 150	13	11
151 to 280	20	13
281 to 500	29	16
501 to 1,200	34	19
1,201 to 3,200	42	23
3,201 to 10,000	50	29
10,001 to 35,000	60	35
35,001 to 150,000	74	40
150,001 to 500,000	90	40
500,001 and over	102	40

4.7.1.2.2, delete.

TABLE V, Visual and mechanical examination (external): Delete "3.5.3" and substitute "3.5.2".

TABLE V, delete AQL (percent defective), Major and Minor columns.

4.7.1.3.1, delete and substitute:

"4.7.1.3.1 Sampling plan. A sample of parts shall be randomly selected from each inspection lot in accordance with table V-1. If one or more defects are found, the lot shall be rescreened and defects removed. After screening and removal of defects, a new sample of parts shall be randomly selected in accordance with table V-1. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification."

PAGE 11

4.7.1.3.2, delete.

* TABLE VI, Dielectric withstanding voltage, Barometric pressure, and Insulation resistance, delete.

TABLE VI, after "TEST" add "1/".

Downloaded from http://www.everyspec.com

TABLE VI, add:

"1/ If the manufacturer can demonstrate that these tests have been performed five consecutive times with zero failures, these tests can be performed on an annual basis, with approval of the qualifying activity. If the interface, physical dimension, or processing of the part is changed, or if there are any quality problems or failures, the qualifying activity may require resumption of the original test frequency. A change in test frequency does not relieve the manufacturer from meeting the test requirements in case of dispute."

4.7.1.4, 4.7.1.4.1, 4.7.1.4.2, 4.7.1.4.3, 4.7.1.4.4, and 4.7.1.4.5, delete.

4.7.2, delete.

PAGE 12

TABLE VII, delete.

PAGE 13

4.8.2a, delete and substitute:

"a. Test condition A-1 for qualification; A for group A inspection. Step 3 shall be at the maximum operating temperature for the class. (NOTE: The manufacturer has the option of performing the group A thermal shock test at 125°C for all products supplied to this specification. However, performing the test at a higher temperature than the maximum operating temperature for some QPL coils is at the risk of the manufacturer.)"

* 4.8.3, delete.

* 4.8.4, delete.

* 4.8.5, delete.

PAGE 15

4.8.8.1.1, delete and substitute:

"4.8.8.1.1 Effective inductance for cylindrical coils (inductance 0.10 to 10.0 microhenries, inclusive). The tests shall be performed using a Q meter such as Hewlett Packard model 260A, HP4342A, HP250RX, or equivalent at appropriate test frequencies as listed in the instructions for the test equipment. Suitable means shall be used to calibrate the frequency dial of the Q meter within ± 0.1 percent for the applicable test frequency. Frequencies to be used for testing the various ranges of inductance shall be as follows:

Inductance range (mH)	Reference test frequency (MHz) for 260A
0.10 to 1.0 inclusive	25.0
Above 1.0 to 10.0 inclusive	7.9

Allowance shall be made for the internal inductance of the Q meter and the test fixture as determined in 4.8.8.1.1.1."

PAGE 16

4.8.8.1.2, under paragraph: Delete "Test Frequency, MHz" and substitute "Reference test frequency (MHz) for 260A."

FIGURE 3, end of title, add: "or equivalent."

Downloaded from http://www.everyspec.com

PAGE 17

FIGURE 4, end of title, add: "or equivalent."

PAGE 19

4.8.8.2, first sentence, delete and substitute: "The test shall be performed using a Q meter such as Hewlett Packard model 260A, HP4342A, HP250RX meter, or equivalent."

4.8.8.3, first sentence, delete and substitute: "Unshielded coils shall be placed in a field of a variable-frequency oscillator, such as Measurements Corporation megacycle meter, model 59, or equivalent."

4.8.8.3.1, first sentence, delete and substitute: "When unshielded coils under test cannot be resonated by the method specified in 4.8.8.3, the test shall be performed using the instruments specified in 4.8.8.2 or equivalent."

PAGE 20

FIGURE 7, end of title, add: "or equivalent."

PAGE 21

FIGURE 8, end of title, add: "or equivalent."

PAGE 22

FIGURE 9, end of title, add: "or equivalent."

PAGE 23

4.8.8.4, last sentence, delete: “and group C inspection”.

PAGE 24

4.8.8.6, delete equation and substitute: "$Rp = \frac{.159Q_1Q_2}{FC_1(Q_1 - Q_2)}$"

PAGE 26

FIGURE 11, end of title, add: "or equivalent."

PAGE 27

FIGURE 11, end of title, add: "or equivalent."

PAGE 28

* 4.8.11, delete and substitute the following:

"4.8.11 Resistance to soldering heat (see 3.15) Terminals to be used for soldered connections shall be tested in accordance with method 210 of MIL-STD-202. The following details shall apply:

a. Depth of immersion in molten solder - 0.25 inch from the nearest insulating material, or to ½ the exposed length of the terminal, whichever point is closer to the insulating material.

b. Test condition C.

Downloaded from http://www.everyspec.com

c. After the test and as soon as the solder terminals have returned to room ambient temperature, the following tests shall be made in the order shown:

(1) Visual: There shall be no evidence of solder reflow of internal connections as evidenced by solder flowing from the body of the device.

(2) Thermal shock: As specified in 4.8.2a.

(3) Terminal strength: As specified in 4.8.12. There shall be no evidence of mechanical damage or loosening of terminals.

(4) Electrical verification: Winding continuity shall be verified."

4.8.13.b.1, 4.8.13.b.2, and 4.8.13.b.3, delete "±2°C" and substitute "±5°C".

PAGE 29

4.8.14.2, delete "$^{+0°}_{-2°}$ C" and substitute "±5°C".

4.8.15.1a., line 4, delete "1.25" and substitute ".250".

PAGE 30

4.8.17, delete.

4.8.18a., last sentence, delete and substitute: "All mounting straps shall be removed to perform step 7a and shall be replaced prior to returning the coils to the humidity chamber. Step 7b shall not be applicable."

PAGE 31

5.1 through 5.4.2.4, delete and substitute:

"5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity."

PAGE 32

After 6, add:

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

6.1, line 2, delete "involing" and substitute "involving".

6.2, 6.2.1, and 6.2.2, delete and substitute:

"6.2 Acquisition requirements Acquisition documents must specify the following:

a. Title, number, and date of this specification.

b. Title, number, and date of applicable specification sheet (or military standard), the military part number, and the complete type designation (see 1.2.1 and 3.10).

Downloaded from http://www.everyspec.com

c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).

d. Packaging requirements (see 5.1)."

PAGE 34

6.9, delete.

PAGE 35

20.1.2, line 3, delete "Nine" and substitute "Ten".

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment 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 amendment.

Custodians:
Army - CR
Navy - EC
Air Force - 85

Review activities:
Army - AR, CR4, MI
Navy - AS, CG, OS, SH
Air Force - 17, 19, 99

Preparing activity:
DLA -CC

(Project 5950-0956)