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MILITARY SPECIFICATION

DUMMY LOADS, ELECTRICAL, WAVEGUIDE, 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 waveguide electrical dummy loads for use in terminating radio frequency transmission lines (see 6.1).

1.2 Classification. Dummy loads covered by this specification shall be of the following classes, as specified (see 3.1):

Class I	-	Dry finned loads.
Class II	-	Liquid cooled loads.
Class III	-	Nonfinned and nonliquid cooled loads.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

NN-P-71	-	Pallets, Material Handling, Wood, Double Faced, Stringer Construction.
QQ-A-200/9	-	Aluminum Alloy Bar, Rod, Shapes, Tube, and Wire, Extruded, 6063.
QQ-A-250/11	-	Aluminum Alloy 6061, Plate and Sheet.
QQ-A-591	-	Aluminum Alloy Die Castings.
QQ-A-596	-	Aluminum Alloy Permanent and Semi-Permanent Mold Castings.
QQ-A-601	-	Aluminum Alloy Sand Castings.
QQ-B-613	-	Brass, Leaded and Nonleaded: Flat Products (Plate, Bar, Sheet, and Strip).
QQ-S-763	-	Steel Bars, Wire, Shapes, and Forgings, Corrosion-Resisting.
QQ-S-766	-	Steel Plates, Sheets, and Strip - Corrosion Resisting.
QQ-S-781	-	Strapping, Steel, Flat and Seals.
TT-E-489	-	Enamel, Alkyd, Gloss, (For Exterior and Interior Surfaces).
TT-E-529	-	Enamel, Alkyd, Semi-Gloss.
TT-L-58	-	Lacquer, Spraying, Clear and Pigmented Cellulose Nitrate (General Interior Use).
TT-P-1757	-	Primer Coating, Zinc Chromate, Low Moisture Sensitivity
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-601	-	Boxes, Wood, Cleated-Plywood.
PPP-B-621	-	Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	-	Boxes, Shipping, Fiberboard.
PPP-B-676	-	Boxes, Setup.
PPP-T-60	-	Tape: Packaging, Waterproof.
PPP-T-76	-	Tape, Pressure-Sensitive Adhesive Paper, (For Carton Sealing).

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MIL-W-85	-	Waveguides, Rigid, Rectangular, General Specification for.
MIL-P-116	-	Preservation-Packaging, Methods of.
MIL-B-131	-	Barrier Materials, Watervaporproof, Flexible, Heat-Sealable.
MIL-P-1144	-	Pipe, Stainless Steel, (Corrosion-Resistant) Seamless or Welded.
MIL-F-3922	-	Flanges, Waveguide, General Purpose, General Specification for.
MIL-S-4043	-	Steel, Corrosion-Resisting, (Extra Low Carbon Type 304) Plate, Sheet, and Strip.
MIL-A-8625	-	Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-F-14072	-	Finishes for Ground Signal Equipment.
MIL-C-45662	-	Calibration System Requirements.

(See supplement 1 for list of associated specification sheets.)

STANDARDS

MILITARY

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-147	-	Palletized Unit Loads for 40" x 48" Pallets.
MIL-STD-202	-	Test Methods for Electronic and Electrical Component Parts.
MIL-STD-1285	-	Marking of Electrical and Electronic Parts.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

NATIONAL BUREAU OF STANDARDS

Handbook H28 - Screw-Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

B46.1-1962 - Surface Texture.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, New York 10018.)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (AMS)

3304D - Silicone Rubber, General Purpose 65 - 75.

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 485 Lexington Avenue, New York, New York 10017.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B209-66 - Aluminum-Alloy Sheet and Plate.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

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3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern. (See 6.2.)

3.2 Qualification. Dummy loads furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.5 and 6.3).

3.3 Material. The material for each part shall be as specified herein; however, when a definite material is not specified, a material shall be used which will enable the dummy loads to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product. The material shall be selected from the following:

(a) Aluminum alloy plates and sheets shall conform to composition 6061 of QQ-A-250/11; extruded aluminum alloy shall conform to composition 6063 of QQ-A-200/9 or composition 6061 of QQ-A-250/11.
(b) Corrosion-resisting steel plates, sheets, and strips shall conform to QQ-S-766 and MIL-S-4043.
(c) Corrosion-resisting forgings shall conform to QQ-S-763 and corrosion-resisting steel pipe shall conform to MIL-P-1144.
(d) Copper alloy sheet shall conform to QQ-B-613.
(e) Aluminum alloy castings shall conform to alloy A360 of QQ-A-591, class 8 of QQ-A-596, or alloy 40E of QQ-A-601.

3.3.1 Waveguides and flanges. Waveguides shall conform to MIL-W-85; flanges shall conform to MIL-F-3922.

3.3.2 Preformed packaging and gaskets. Preformed packaging and gaskets shall be silicone rubber conforming to publication AMS 3304D.

3.3.3 Identification plates. The identification plates shall be fabricated from aluminum alloy conforming to temper H14 of ASTM B209-66 and shall be 0.025 inch thick.

3.4 Design and construction. Dummy loads shall be of the design, construction, and physical dimensions specified (see 3.1).

3.4.1 Fabrication of shell. The shell of the dummy load shall be forged, cast, or fabricated of plate, sheet, drawn or extruded stock, or a combination of some of or all of the methods (see 3.3). When applicable, the number of cooling fins shall be compatible with the power-dissipation requirement at maximum permissible operating temperature and maximum input power (see 3.12).

3.4.2 Weight. The weight shall not exceed the limit specified (see 3.1).

3.4.3 Finish. Unless otherwise specified (see 3.1), the finish shall be as specified in 3.4.3.1, 3.4.3.2, and 3.4.3.3.

3.4.3.1 Mating surface (flange face). The mating surface of the dummy load shall be finished to 63 root-mean-square microinches in accordance with publication ANSI B46.1-1962, and the flange face shall be free of flaws such as voids, blow holes, porosity effects, and pitting.

3.4.3.2 Interior and exterior surfaces and flange faces. All exterior surfaces of the dummy load, except the mating surface, shall be finished in accordance with finish number P513 of MIL-F-14072 for aluminum alloy loads, and finish number P213 of MIL-F-14072 for steel and copper loads, with the final film of enamel conforming to TT-E-489 (black, unless otherwise specified, see 3.1). Interior metal surfaces and flange faces shall be finished in accordance with finish E513 of MIL-F-14072 for aluminum alloy loads, and finish number E300 of MIL-F-14072 for steel loads, except that they shall not be painted.

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3.4.3.3 Identification plates. Identification plates shall be treated with an anodic coating conforming to MIL-A-8625. Letters and numerals shall be raised 0.003 inch to 0.005 inch by 1/8-inch high and centrally located and dulled before anodizing. Backgrounds shall be filled with zinc yellow primer conforming to TT-P-1757, and then coated with black enamel conforming to class B of TT-E-529. Each coat shall be baked. A final finish of lacquer conforming to type I of TT-L-58 shall then be applied.

3.4.4 Threaded parts. All threaded parts shall be in accordance with Handbook H28.

3.5 Voltage standing wave ratio (VSWR). When dummy loads are tested as specified in 4.7.2, the VSWR shall not exceed the value specified (see 3.1).

3.5.1 High power VSWR (when specified, see 3.1). When dummy loads are tested as specified in 4.7.2.1, the VSWR shall not exceed the value specified (see 3.1).

3.6 Thermal shock. When dummy loads are tested as specified in 4.7.3, the VSWR shall not exceed the value specified (see 3.1).

3.7 Moisture resistance. When dummy loads are tested as specified in 4.7.4, the VSWR shall not exceed the value specified (see 3.1).

3.8 Vibration. When dummy loads are tested as specified in 4.7.5, the VSWR shall not exceed the value specified (see 3.1).

3.9 Shock. When dummy loads are tested as specified in 4.7.6, the VSWR shall not exceed the value specified (see 3.1).

3.10 Barometric pressure (when specified, see 3.1). When dummy loads are tested as specified in 4.7.7, the VSWR shall not exceed the value specified (see 3.1).

3.11 Salt spray (when specified, see 3.1). When dummy loads are tested as specified in 4.7.8, the VSWR shall not exceed the value specified (see 3.1).

3.12 Power dissipation. When dummy loads are tested as specified in 4.7.9, there shall be no breakdown and no evidence of deterioration such as cracks or dusting of the surface, and excessive release of moisture shall not cause malfunction of the dummy load or associated waveguide components. ("Malfunction of the dummy load" is defined as the inability of component to meet other performance requirements of the specification.) During this test, the maximum temperature at any point on the outside surface of the finned dummy loads shall not exceed 300°C. For nonfinned or nonliquid cooled dummy loads, the maximum temperature at any point on the outside surface shall not exceed the specified value (see 3.1). For the liquid cooled loads, the outside temperature of the water shall not exceed the temperature specified (see 3.1).

3.13 Endurance. When dummy loads are tested as specified in 4.7.10, there shall be no breakdown, and the VSWR shall not exceed the value specified (see 3.1). For the liquid cooled loads, the output temperature shall not exceed the temperature specified (see 3.1).

3.14 Pressurization. When dummy loads are tested as specified in 4.7.11, there shall be no evidence of loss of pressure as detected by a continuous stream of excaping air bubbles.

3.15 Marking. Dummy loads shall be marked in accordance with MIL-STD-1285 with the part number and the manufacturer's source code. Marking characters shall be approximately 1/8-inch in height. The marking shall be placed on the identification plate, using a method which will provide legible and permanent marking for the life of the dummy load. The manufacturer's name or trademark may also be included in the marking provided such is not expressly forbidden in the contract or order.

3.16 Workmanship. Dummy loads shall be manufactured and processed in such a manner as to be uniform in quality, and the shell of the dummy load shall be free from tool marks, burrs, deep scratches, and other defects that will affect life, serviceability, or appearance.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the supplier. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with MIL-C-45662.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

(a) Materials inspection (see 4.3).
(b) Qualification inspection (see 4.5).
(c) Quality conformance inspection (see 4.6).

4.3 Materials inspection. Materials inspection shall consist of certification supported by verifying data that the materials listed in table I, used in fabricating the dummy loads, are in accordance with the applicable referenced specifications or requirements prior to such fabrication.

TABLE I. Materials inspection.

Material	Requirement paragraph	Applicable specification
Aluminum alloy	3.3	QQ-A-200/9, QQ-A-250/11
Corrosion-resisting steel	3.3	QQ-S-766, MIL-S-4043
Corrosion-resisting steel pipe	3.3	MIL-P-1144
Corrosion-resisting forging	3.3	QQ-S-763
Copper alloy sheet	3.3	QQ-B-613
Aluminum alloy casting	3.3	QQ-A-591, QQ-A-596, QQ-A-601
Waveguides	3.3.1	MIL-W-85
Flanges	3.3.1	MIL-F-3922
Silicone rubber	3.3.2	AMS 3304D
Identification plates	3.3.3	ASTM B209-66
Finish	3.4.3	MIL-F-14072, TT-E-489, MIL-A-8625, TT-P-1757 TT-E-529, TT-L-58 ANSI B46.1

4.4 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.5 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.3) on sample units produced with equipment and procedures normally used in production.

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4.5.1 Sample size. The number of dummy loads to be subjected to qualification inspection shall be as specified in the appendix to this specification.

4.5.2 Inspection routine. The sample shall be subjected to the inspections specified in table II, in the order shown.

TABLE II. Qualification inspection.

Examination or test	Requirement paragraph	Method paragraph
Visual and mechanical examination	3.1, 3.3 to 3.4.4 incl, 3.15, and 3.16	4.7.1
VSWR	3.5	4.7.2
High power VSWR (when specified, see 3.1)	3.5.1	4.7.2.1
Thermal shock	3.6	4.7.3
Moisture resistance	3.7	4.7.4
Vibration	3.8	4.7.5
Shock	3.9	4.7.6
Barometric pressure (when specified, see 3.1)	3.10	4.7.7
Salt spray (when specified, see 3.1)	3.11	4.7.8
Power dissipation	3.12	4.7.9
Endurance	3.13	4.7.10
Pressurization	3.14	4.7.11

4.5.3 Failures. One or more failures shall be cause for refusal to grant qualification approval.

4.5.4 Retention of qualification. To retain qualification, the supplier shall forward a report at 12-month intervals to the qualifying activity. The qualifying activity shall establish the initial reporting date. The report shall consist of:

(a) A summary of the results of the tests performed for inspection of product for delivery, (group A), indicating as a minimum the number of lots that have passed and the number that have failed. The results of tests of all reworked lots shall be identified and accounted for.

(b) A summary of the results of tests performed for qualification verification inspection, (group B), including the number and mode of failures. The summary shall include results of all qualification verification inspection tests performed on completed lots during the 12-month period. If the summary of the test results indicates nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 30 days after the end of each 12-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the supplier shall immediately notify the qualifying activity at any time that the inspection data indicates noncompliance of the product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, a report shall be submitted certifying that the company still has the capabilities and facilities necessary to produce the item. If during two consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit a representative product of each class to testing in accordance with the qualification inspection requirements.

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4.6 Quality conformance inspection.

4.6.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A inspection.

4.6.1.1 Inspection lot. An inspection lot shall consist of all dummy loads of the same part number, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.1.1 Group A inspection. Group A inspection shall consist of the examination and tests specified in table III, in the order shown.

4.6.1.1.1.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be as specified in table III. Major and minor defects shall be as defined in MIL-STD-105.

4.6.1.1.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

TABLE III. Group A inspection.

Examination or test	Requirement paragraph	Method paragraph	AQL (percent defective)	
			Major	Minor
Visual and mechanical examination -	3.1, 3.3 to 3.4.4 incl, 3.15, and 3.16	4.7.1	1.0	4.0
VSWR- - - - - - - - - - - - - - - -	3.5	4.7.2	1.0	---
High power VSWR (when specified, see 3.1)- - - - - - - - - - - - -	3.5.1	4.7.2.1	1.0	---

4.6.2 Qualification verification inspection. Qualification verification inspection shall consist of group B. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.6.2.1.4), delivery of products which have passed group A shall not be delayed pending the results of these qualification verification inspections.

4.6.2.1 Group B inspection. Group B inspection shall consist of the tests specified in table IV, in the order shown. Group B inspection shall be made on sample units selected from inspection lots which have passed the group A inspection.

4.6.2.1.1 Sampling plan. A minimum of one sample unit shall be selected from those covered by a single class.

4.6.2.1.2 Failures. If one or more sample units fail to pass group B inspection, the sample shall be considered to have failed.

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TABLE IV. Group B inspection.

Test[1/]	Requirement paragraph	Test method paragraph
Thermal shock [2/]	3.6	4.7.3
Moisture resistance [2/]	3.7	4.7.4
Vibration	3.8	4.7.5
Shock	3.9	4.7.6
Barometric pressure (when specified, see 3.1)[2/]	3.10	4.7.7
Salt spray (when specified, see 3.1)	3.11	4.7.8
Pressurization	3.14	4.7.11

1/ Power dissipation and endurance tests specified in 4.7.9 and 4.7.10 shall be performed at the conclusion of each test.

2/ Power dissipation and endurance tests shall be performed within 12 hours after the moisture resistance and barometric pressure tests.

4.6.2.1.3 Disposition of sample units. Sample units which have passed the group B inspection may be delivered on the contract or order provided they are reworked to conform to this specification.

4.6.2.1.4 Noncompliance. If a sample fails to pass group B inspection, the supplier shall take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc., and which are considered subject to the same failure. Acceptance of the product shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, group B inspection shall be repeated on additional sample units (all inspection, or the inspection which the original sample failed, at the option of the Government). Group A inspection may be reinstituted; however, final acceptance shall be withheld until the group B reinspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and the corrective action taken shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6.3 Inspection of preparation for delivery. The sampling and inspection of the preservation-packaging and interior package marking shall be in accordance with the group A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification and the marking requirements of MIL-STD-129.

4.7 Methods of examination and test.

4.7.1 Visual and mechanical examination. Dummy loads shall be examined to verify that the materials, design, construction, physical dimensions, finish, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.3 to 3.4.4 inclusive, 3.15, and 3.16).

4.7.2 VSWR (see 3.5). The VSWR shall be measured at low power using a sweep technique throughout the frequency range specified (see 3.1).

4.7.2.1 High power VSWR (when specified, see 3.1) (see 3.5.1). The VSWR shall be measured at full rated power or as specified (see 3.1).

4.7.3 Thermal shock (see 3.6). With the flanges uncovered, dummy loads shall be tested in accordance with method 107 of MIL-STD-202. The following detail and exception shall apply:

(a) Test condition - B, unless otherwise specified (see 3.1).
(b) Final measurements after drying period - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

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4.7.4 Moisture resistance (see 3.7). With the flanges uncovered, dummy loads shall be tested in accordance with method 106 of MIL-STD-202. The following details shall apply:

(a) Loading voltage - Not applicable.
(b) Final measurement - After the drying period, VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.5 Vibration (see 3.8). Unless otherwise specified (see 3.1), dummy loads shall be tested as specified in 4.7.5.1. When specified (see 3.1), dummy loads shall be tested as specified in 4.7.5.2.

4.7.5.1 Simple harmonic nature. Dummy loads shall be tested in accordance with method 201 of MIL-STD-202. The following details shall apply:

(a) Tests and measurement prior to vibration - None.
(b) Method of mounting - Rigidly mounted by flanges and end mounting holes (if applicable) in the normal manner.
(c) Test and measurements after vibration - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.5.2 Random nature. Dummy loads shall be tested in accordance with method 214 of MIL-STD-202. The following details shall apply:

(a) Method of mounting - Rigidly mounted by flanges and end mounting holes (if applicable) in the normal manner.
(b) Test condition - II D and 15 minutes duration, unless otherwise specified (see 3.1).
(c) Test and measurements after vibration - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.6 Shock (see 3.9). Unless otherwise specified (see 3.1), dummy loads shall be tested as specified in 4.7.6.1. When specified (see 3.1), dummy loads shall be tested as specified in 4.7.6.2.

4.7.6.1 High impact. Dummy loads shall be tested in accordance with method 207 of MIL-STD-202. The following details shall apply:

(a) Mounting - Rigidly mounted by flanges and end mounting holes (if applicable), on fixture of figure 207-5.
(b) Measurements after test - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.6.2 Specified pulse. Dummy loads shall be tested in accordance with method 213 of MIL-STD-202. The following details shall apply:

(a) Mounting - As specified in 4.7.6.1(a).
(b) Test condition - As specified (see 3.1).
(c) Measurements after test - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.7 Barometric pressure (when specified, see 3.1) (see 3.10). Dummy loads shall be tested in accordance with method 105 of MIL-STD-202. The following details shall apply:

(a) Method of mounting - Normal mounting means.
(b) Test condition - As specified (see 3.1).
(c) Measurement after test - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

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4.7.8 Salt spray (when specified, see 3.1) (see 3.11). With the flanges uncovered, dummy loads shall be tested in accordance with method 101 of MIL-STD-202. The following details shall apply:

(a) Mounting - Normal mounting means.
(b) Test condition - B.
(c) Measurement after test - VSWR shall be measured as specified in 4.7.2 and 4.7.2.1 (if applicable).

4.7.9 Power dissipation (see 3.12). The specified peak and average power shall be applied simultaneously at any one frequency within the specified range (see 3.1). When no peak power is specified, apply 1.5 times rated average power. Power shall be maintained for a period of 15 minutes after the load has reached thermal equilibrium. It is considered that thermal equilibrium has been reached when the temperature of the load has not changed by more than 5°C over a period of 5 minutes. Unless otherwise specified (see 3.1), the internal pressure of the load shall be 30 pounds per square inch gage (psig). For liquid cooled loads the minimum flow rate and coolant pressure specified (see 3.1) shall be used with the input temperature as specified.

4.7.10 Endurance (see 3.13). Dummy loads shall be subjected to the specified peak power (when applicable) and average power for test purposes, for 10 cycles of 1 hour power on and a minimum of 1 hour off, at any frequency within the specified frequency range (see 3.1). The VSWR shall be measured as specified in 4.7.2 (and 4.7.2.1, if applicable) preceding the test, and at interval of 1 hour thereafter during the off period. Unless otherwise specified (see 3.1), the internal pressure of the load shall be 30 psig. For liquid cooled loads the minimum flow rate and coolant pressure specified (see 3.1) shall be used with the input temperature as specified.

4.7.11 Pressurization (see 3.14). Dummy load RF path shall be subjected to an internal air pressure of 35 psig for at least 5 minutes while immersed in tap water of approximately 20°C. For class II dummy loads, coolant chamber shall be subjected to an internal air pressure as specified (see 3.1) for at least 5 minutes while immersed in tap water of approximately 20°C.

5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government procurements. Preparation for delivery requirements of referenced documents listed in Section 2 do not apply unless specifically stated in the contract or order. Preparation for delivery requirements for products procured by contractors shall be specified in the individual orders.)

5.1 Preservation-packaging. Preservation-packaging shall be level A or C, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Dummy loads shall be cleaned in accordance with MIL-P-116, process C-1.

5.1.1.2 Drying. Dummy loads shall be dried in accordance with MIL-P-116.

5.1.1.3 Preservative application. Preservatives shall not be used.

5.1.1.4 Unit packaging. Dummy loads shall be individually packaged in accordance with the submethods of MIL-P-116 specified herein insuring compliance with the general requirements paragraph under methods of preservation (unit protection) and the physical protection requirements paragraph therein.

5.1.1.4.1 Dummy loads up to 10 pounds. Dummy loads weighing less than 10 pounds shall be packaged in accordance with submethod II e using barrier material conforming to MIL-B-131, class 1. The container shall conform to PPP-B-566, PPP-B-676, or PPP-B-636.

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5.1.1.4.2 Dummy loads 10 pounds and over. Dummy loads weighing 10 pounds and over shall be packaged in accordance with submethod II b using barrier material conforming to MIL-B-131, class 1. The unit container shall conform to PPP-B-636, class weather resistant.

5.1.1.5 Intermediate packaging. Not required.

5.1.2 Level C. Dummy loads shall be clean, dry and packaged in a manner that will afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the first receiving activity.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2). Unit containers conforming to 5.1.1.4.2 may be used as shipping containers provided the requirements for the applicable level of packing specified herein are met.

5.2.1 Level A. The packaged dummy loads shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. In lieu of the closure and waterproofing requirement in the appendix of PPP-B-636, closure and waterproofing shall be accomplished by sealing all seams, corners and manufacturer's joint with tape, two inches minimum width, conforming to PPP-T-60, class 1 or PPP-T-76. Banding (reinforcement requirements) shall be applied in accordance with the appendix to PPP-B-636 using non-metallic or tape banding only.

5.2.2 Level B. The packaged dummy loads shall be packed in fiberboard containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closures shall be in accordance with the appendix thereto.

5.2.3 Level C. The packaged dummy loads shall be packed in shipping containers in a manner that will afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. These packs shall conform to the applicable carrier rules and regulations.

5.2.4 Unitized loads. Unitized loads, commensurate with the level of packing specified in the contract or order, shall be used whenever total quantities for shipment to one destination equal 40 cubic feet or more. Quantities less than 40 cubic feet need not be unitized. Unitized loads shall be uniform in size and quantities to the greatest extent practicable.

5.2.4.1 Level A. Dummy loads, packed as specified in 5.2.1, shall be unitized on pallets in conformance with MIL-STD-147, load type I, with a fiberboard cap (storage aid 4) positioned over the load.

5.2.4.2 Level B. Dummy loads, packed as specified in 5.2.2, shall be unitized as specified in 5.2.4.1 except that the fiberboard caps shall be class domestic.

5.2.4.3 Level C. Dummy loads, packed as specified in 5.2.3, shall be unitized with pallets and caps of the type, size and kind commonly used for the purpose and shall conform to the applicable carrier rules and regulations.

5.3 Marking. In addition to any special marking required by the contract or purchase order (see 6.2), each unit package, exterior container and unitized load shall be marked in accordance with MIL-STD-129.

5.4 General. Special requirements for Army procurements are specified in 5.4.2.

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2, and 5.2.3) shall be of a minimum tare and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent practicable.

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5.4.2 Army procurements.

5.4.2.1 Level A and B packing. For level A packing when quantities per destination are less than a unitized load, the fiberboard containers shall not be banded but shall be placed in a close fitting box conforming to PPP-B-601, overseas type; PPP-B-621, class 2, style 4 or PPP-B-585, class 3, style 2 or 3. Closure and strapping shall be in accordance with applicable container specification except that metal strapping shall conform to QQ-S-781, type I, finish A. When the gross weight exceeds 200 pounds or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, 3 x 4 inch skids (laid flat) shall be applied in accordance with the requirements of the container specification. If not described in the container specification, the skids shall be applied in a manner which will adequately support the item and facilitate the use of material handling equipment. For level B packing, fiberboard boxes shall be weather resistant as specified in level A and the containers shall be banded (see 5.2.1 and 5.2.2).

5.4.2.2 Level A and B unitization. For level A and B unitization, the fiberboard caps shall be weather resistant and softwood pallets conforming to NN-P-71, type IV, size 2 shall be used. The loads shall be bonded to the pallets by strapping conforming to QQ-S-781, type I, finish A or shrink film. (See 5.2.4.1 and 5.2.4.2.)

6. NOTES

6.1 Intended use. Dummy loads covered by this specification are intended for use in waveguide transmission lines, to prevent radiation during testing of the equipment by absorbing the power.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Title, number, and date of the applicable specification sheet and part number.
(c) Levels of preservation-packaging and packing required (see 5.1 and 5.2).
(d) Special marking, if required (see 5.3).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable qualified products list whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the qualified products list is the Naval Electronic Systems Command, ELEX 5043, Department of the Navy, Washington, D.C. 20360. Information pertaining to qualification of products may be obtained from either the Naval Electronic Systems Command or the Defense Electronics Supply Center (DESC), Dayton, Ohio 45444, agent for administration of the qualified products list. Application for qualification tests shall be made in accordance with SD-6, "Provisions Governing Qualification."

6.3.1 Copies of SD-6, "Provisions Governing Qualification," may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

6.4 Adapters. The test point of a waveguide system should terminate in a choke flange in order to minimize the VSWR and the heating of the dummy load flange due to mechanical misalignment. Where this is not the case, a choke adapter will be required.

6.5 Material precaution. All dummy loads covered by this specification are made from aluminum alloy, corrosion-resisting steel, or copper alloy and silver alloy. Adapters will be required to prevent harmful galvanic action when aluminum alloy dummy loads are used with mating brass waveguides. Silver plating the mating surface of the dummy load is another method of overcoming this galvanic action.

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6.6 Revision asterisks. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

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

Review activities:
Army - MU
Navy -
Air Force - 11, 17
DSA - ES

User activities:
Army - MI
Navy - CG, MC, AS, OS, SH
Air Force - 19

Preparing activity:
Navy - EC

Agent:
DSA - ES

(Project 5985-0744)

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APPENDIX

PROCEDURE FOR QUALIFICATION APPROVAL

10. SCOPE

10.1 This appendix details the procedure for submission of samples for qualification testing and approval of dummy loads covered by this specification.

20. SUBMISSION

20.1 Sample. A sample consisting of three dummy loads of each class for which qualification is requested, shall be submitted, except for grouping permitted in 30.1.

20.2 Certification of material. When submitting samples for qualification, the manufacturer shall submit certification that the materials used in his components are in accordance with the applicable specification requirements.

30. EXTENT OF QUALIFICATION

30.1 Qualification obtained for one dummy load shall constitute qualification for other dummy loads in the same group as specified in table V.

TABLE V. Grouping for qualification.

Group	Class	Dummy load part number
1	I	M3954/13-01 (DA-159), M3954/12-01 (DA-158), and M3954/14-01 (DA-160) 1/
2	II	M3954/13-02, -03, and -04.
3	I	M3954/16-01 (DA-144), M3954/19-01 (DA-146), and M3954/11-01 (DA-148)
4	II	M3954/16-02, -03, and -04; M3954/19-02, -03, and -04; M3954/11-02, -03, and -04.
5	I	M3954/18-01 (DA-145), M3954/15-01 (DA-147), and M3954/17-01 (DA-149).
6	II	M3954/18-02, -03, and -04; M3954/15-02, -03, and -04; M3954/17-02, -03, and -04.

1/ Example: Qualification of dummy load with P/N M3954/13-01 qualifies dummy loads with P/Ns M3954/12-01 and M3954/14-01.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No. 22-R255

INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.

DOCUMENT IDENTIFIER AND TITLE

NAME OF ORGANIZATION AND ADDRESS

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?
   A. GIVE PARAGRAPH NUMBER AND WORDING.

   B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID

3. IS THE DOCUMENT RESTRICTIVE?

   ☐ YES ☐ NO *(If "Yes", in what way?)*

4. REMARKS

SUBMITTED BY *(Printed or typed name and address - Optional)*

TELEPHONE NO.

DATE

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