INCH-POUND

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SUPERSEDING
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DETAIL SPECIFICATION

DUMMY LOADS, ELECTRICAL, WAVEGUIDE

GENERAL SPECIFICATION FOR

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 are of the following classes, as specified (see 3.1).

Class I - Dry finned loads.
Class II - Liquid cooled loads
Class III - Non-finned and non-liquid cooled loads.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in section 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 of documents cited in 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbook. 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 (see 6.2).

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, Columbus, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to RFConnectors@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.

AMSC N/A FSC 5985

FEDERAL SPECIFICATIONS

TT-P-1757	Primer Coating, ALKYD Base, One Component

FEDERAL STANDARDS

FED-STD-H28	Screw-Thread Standards for Federal Services

COMMERCIAL ITEM DESCRIPTIONS

A-A-3003	Lacquer, Spraying, Clear and Pigmented for Interior Use

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-85	Waveguides, Rigid, Rectangular, General Specification for
MIL-DTL-3922	Flanges, Waveguide, General Purpose, General Specification for
MIL-A-8625	Anodic Coatings for Aluminum and Aluminum Alloys
MIL-DTL-14072	Finishes for Ground Based Electronic Equipment
MIL-P-24691/3	Pipe and Tube, Corrosion-Resistant, Stainless Steel, Seamless or Welded
MIL-DTL-55330	Connectors, Electrical and Fiber Optic, Packaging of

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-202	Test Method Standard for Electronic and Electrical Component Parts
MIL-STD-202-101	Test Method Standard Method 101, Salt Atmosphere (corrosion)
MIL-STD-202-105	Test Method Standard Method 105, Barometric Pressure (Reduced)
MIL-STD-202-106	Test Method Standard Method 106, Moisture Resistance
MIL-STD-202-107	Test Method Standard Method 107, Thermal Shock
MIL-STD-202-201	Test Method Standard Method 201, Vibration
MIL-STD-202-207	Test Method Standard Method 207, High Impact Shock
MIL-STD-202-213	Test Method Standard Method 213, Shock (Specified Pulse)
MIL-STD-202-214	Test Method Standard Method 214, Random Vibration
MIL-STD-889	Dissimilar Metals
MIL-STD-1285	Marking of Electrical and Electronic Parts

(See supplement 1 for list of specification sheets.)

(Copies of these documents are available online at http://quicksearch.dla.mil.)

2.3 Non-Government publications. The following documents 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 (see 6.2).

ASME INTERNATIONAL

ASME B46.1	Surface Texture (Surface Roughness, Waviness, and Lay)

(Copies of these documents are available online at http://www.asme.org.)

SAE INTERNATIONAL

SAE AMS 3304	Silicone Rubber, General Purpose 70 Durometer

(Copies of these documents are available online at http://standards.sae.org.)

ASTM INTERNATIONAL

ASTM A240/A240M	Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications
ASTM A484/A484M	General Requirements for Stainless Steel, Bars, Billets, and Forgings
ASTM A582/A582M	Free-Machining Stainless Steel Bars
ASTM A666	Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
ASTM A693	Precipitation-Hardening Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM B124/B124M	Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes
ASTM B26/B26M	Aluminum-Alloy Sand Castings
ASTM B85/B85M	Aluminum-Alloy Die Castings
ASTM B108/B108M	Aluminum-Alloy Permanent Mold Castings
ASTM B152/B152M	Copper Sheet, Strip, Plate, and Rolled Bar
ASTM B209	Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B211	Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire
ASTM B221	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B241/B241M	Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube

(Copies of these documents are available online at http://www.astm.org.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheets, the latter shall govern.

3.2 First article. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.5.

3.3 Critical interface materials. The material for each part shall be as specified herein. If materials other than those specified are used, the contractor shall certify to the qualifying activity that the substitute material enables the dummy loads to meet the requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the product. When a definite material is not specified, a material shall be used which will enable the dummy load to meet the performance requirements of this specification.

3.3.1 Dissimilar metals. Dissimilar metals between which an electromotive couple may exist shall not be placed in contact with each other. Reference is made to MIL-STD-889 for definition of dissimilar metals.

3.3.2 Nonmagnetic materials. All parts shall be made from materials, which are classified, as nonmagnetic. (less than 2 mμ).

3.3.3 Aluminum alloy. Aluminum alloy shall be in accordance with ASTM B26/B26M, ASTM B85/B85M, ASTM B108/B108M, ASTM B209, ASTM B211, ASTM B221 and ASTM B241/B241M.

3.3.3 Corrosion-resisting steel. Corrosion-resisting steel shall be in accordance with ASTM A240/A240M, ASTM A484/A484M, ASTM A666, ASTM A693 and ASTM A582/A582M. Corrosion resisting steel pipe shall be in accordance with MIL-P-24691/3.

3.3.4 Copper alloy. Copper alloy shall be in accordance with ASTM B124/B124M or ASTM B152/B152M.

3.3.5 Waveguides and flanges. Waveguides shall conform to MIL-DTL-85; flanges shall conform to MIL-DTL-3922.

3.3.6 Preformed packaging and gaskets. Preformed packaging and gaskets shall be silicone rubber conforming to SAE AMS 3304.

3.3.7 Identification plates. The identification plates shall be fabricated from aluminum alloy conforming to temper H-14 of ASTM B209 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 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 micro inches in accordance with ASME B46.1, 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-DTL-14072 for aluminum alloy loads, and finish number P213 of MIL-DTL-14072 for steel and copper loads, with the final film of enamel conforming to type II of MIL-DTL-14072. (black, unless otherwise specified, see 3.1). Interior metal surfaces and flange faces shall be finished in accordance with finish E513 of MIL-DTL-14072 for aluminum alloy loads, and finish number E300 of MIL-DTL-14072 for steel loads, except that they shall not be painted.

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. Back-grounds shall be filled with zinc yellow primer conforming to TT-P-1757, and then coated with black enamel conforming to type II of MIL-DTL-14072. Each coat shall be baked. A final finish of lacquer conforming to type I of A-A-3003 shall then be applied.

3.4.4 Threaded parts. All threaded parts shall have screw threads in the unified screw threads series in accordance with FED-STD-H28 and supplements.

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 dummy load shall show no physical damage, and 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 dummy load shall show no physical damage, and 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 dummy load shall show no physical damage, and 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 dummy load shall show no physical damage, and 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 dummy load shall show no physical damage, and 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 dummy load shall show no physical damage, and 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 non-finned or non-liquid 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, the dummy load shall show no physical damage, 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 escaping air bubbles.

3.15 Marking. Dummy loads shall be marked in accordance with MIL-STD-1285 with the part or identifying number (PIN) and the manufacturer's CAGE 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.

4. VERIFICATION

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

a. Materials inspection (see 4.3).
b. First article inspection (see 4.5).
c. Conformance inspection (see 4.6).

4.2 Responsibility for inspection. Unless otherwise specified in the contract or 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.

4.2.1 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 contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment (i.e., industry standard, military standards) shall be required.

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 specifications or requirements prior to such fabrication.

TABLE I. Materials inspection.

Material	Requirement paragraph	Applicable specification
Aluminum Alloy	3.3	ASTM B209 ASTM B211 ASTM B221 ASTM B241/B241M
Corrosion-resisting steel	3.3	ASTM A240/A240M ASTM A666 ASTM A693 ASTM A582/A582M
Corrosion-resisting steel pipe	3.3	MIL-P-24691/3
Corrosion-resisting forging	3.3	ASTM A484/A484M
Copper alloy sheet	3.3	ASTM B124/B124M ASTM B152/B152M
Aluminum Alloy casting	3.3	ASTM B26/B26M ASTM B85//B85M ASTM B108/B108M
Waveguides	3.3.1	MIL-DTL-85
Flanges	3.3.1	MIL-DTL-3922
Silicone rubber	3.3.2	SAE AMS 3304
Identification plates	3.3.3	ASTM B209
Finish	3.4.3	A-A-3003 MIL-DTL-14072 MIL-A-8625 TT-P-1757 ASME 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.

4.4.1 Test method variation. Variation from the specified test method used to verify the electrical parameters are allowed provided that it is demonstrated to the preparing activity or to their agent that such variations in no way relax the requirements of this specification and that they are approved before testing is performed. For proposed test variations, a test method comparative error analysis shall be made available for checking by the preparing activity or their agent.

4.5 First article inspection. Unless otherwise specified (see 6.2), 3 dummy loads of each class shall be required for first article inspection. First article inspection shall consist of the tests specified in table II and performed by the supplier, after award of contract and prior to production, at a location acceptable to the Government. First article inspection shall be performed on sample units, which have been produced with equipment and procedures normally, used in production. First article approval is valid only on the contract or purchase order under which it is granted, unless extended by the Government to other contracts or purchase orders.

TABLE II. Examinations and tests.

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

4.5.1 Failures. One or more failures shall be cause for refusal to grant first article approval.

4.5.2 Disposition of sample units. Sample units, which have been subjected to first article testing, shall not be delivered on the contract.

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 PIN 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 inspection specified in table III in the order shown.

4.6.1.1.1.1 Sampling plan (group A). Table III tests shall be performed on a production lot basis. Samples shall be selected in accordance with table IIIa. If one or more defects are found, the lot shall be screened for that particular defect and defects removed. A new sample of parts shall be selected in accordance with table IIIa and all group A tests again performed. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification.

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 re-inspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as re-inspected lots.

TABLE III. Group A inspection.

Examination or test	Requirement paragraph	Method paragraph	AQL (percent defective')	
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	----

TABLE IIIa. Group A inspection level.

Lot size	Visual and mechanical inspection	
	Major	Minor 1/
1 to 8	All	5
9 to 15	All	5
16 to 25	20	5
26 to 50	20	5
51 to 90	20	7
91 to 150	20	11
151 to 280	20	13
281 to 500	47	16
501 to 1,200	47	19
1,201 to 3,200	53	23
3,201 to 10,000	68	29
10,000 to 35,000	77	35
35,001 to 150,000	96	40
150,0001 to 500,000	119	40
500,001 and over	143	40

NOTES:
1/ Samples may be pulled from either the production lot itself or from samples pulled from the lot for major defect testing. In no case will the sample size exceed the lot size.

Major defect: A major defect is a defect, other than critical, that is likely to result in failure, nor to reduce materially the usability of the unit of product for its intended purpose.

Minor defect: A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

4.6 2 Conformance inspection. Conformance 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 conformance inspections.

4.6.2.1 Group B inspection. Group B inspection shall consist of the inspections specified in table IV in the order shown, and shall be made on sample units which have been subjected to and passed the group A inspection. Dummy loads having identical piece parts may be combined for lot purposes and shall be in proportion to the quantity of each PIN numbered adapter produced.

4.6.2.1.1 Group B sampling plan. The group B sampling plan shall consist of 2 samples, which have been previously subjected to group A testing.

4.6.2.1.2 Nonconforming production control sample units. If a sample unit fails the inspection specified in group B, the contractor shall immediately investigate the cause of failure and shall report to the procuring activity the results thereof and details of the corrective action taken to correct units of product, which were manufactured under the same conditions, with the same materials, processes, and so forth. No sample shall be delivered as a production item under the contract.

4.6.2.1.3 Disposition of sample units. Sample units, which have passed all the group B inspection, may be delivered on the contract or purchase order, if the lot is accepted. Any dummy load deformed or otherwise damaged during testing shall not be delivered on the contract or order.

TABLE IV. Group B inspection.

Test 1/	Requirement paragraph	Test method paragraph
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 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.

4.6.2.1.4 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 re-inspection has shown that the corrective action was successful. In the event of failure after re-inspection, information concerning the failure and the corrective action taken shall be furnished to the cognizant inspection activity and the acquiring activity.

4.6.3 Packaging inspection. The sampling and the inspection of the preservation packaging, packing and container marking shall be in accordance with the requirements of MIL-DTL-55330.

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 MIL-STD-202-107. 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).

4.7.4 Moisture resistance (see 3.7). With the flanges uncovered, dummy loads shall be tested in accordance with MIL-STD-202-106. 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 MIL-STD-202-201. 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 MIL-STD-202-214. 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 MIL-STD-202-207. The following details shall apply:

a. Mounting - Rigidly mounted by flanges and end mounting holes (if applicable), on fixture of MIL-STD-202-207 figure 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 MIL-STD-202-213. 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, MIL-STD-202-105. 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).

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 MIL-STD-202-101. 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). Unless otherwise specified, the contractor shall certify that the dummy load is capable of dissipating the power as indicated in 4.7.9.1. The certificates shall be in the contractor's certified test report to the procuring activity when first article testing is invoked in a contract. When specified (see 3.1 and 6.2(e)), the test shall be in accordance with 4.7.9.1.

4.7.9.1 Power dissipation test (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 20 pounds per square inch gage (psig). For liquid cooled loads, the minimum flow rates and coolant pressure specified (see 3.1) shall be used with the input temperature as specified.

4.7.10 Endurance (see 3.13). Unless otherwise specified, the contractor shall certify that the dummy load is capable of passing the endurance test as indicated in 4.7.10.1. The certification shall be in the contractor's certified test report to the procuring activity when first article testing is invoked in a contract. When specified (see 3.1 and 6.2(f)), the test shall be in accordance with 4.7.10.1.

4.7.10.1 Endurance test (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. 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 Service 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 contacting the responsible packaging activity.

6. NOTES.

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

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 PIN.
c. Special marking, if required.
d. If power dissipation test is required see 4.7.9 and 4.7.9.1.
e. If endurance test is required see 4.7.10 and 4.7.10.1.

6.3 First article. Invitations for bid should provide that the Government reserves the right to waive the requirement for first article samples 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 acquisition.

6.3.1 Defense Logistics Agency (DLA) waiver of first article test. A waiver of a first article testing will only be considered by DLA when the contractor has delivered the same item within the last three years, has no unfavorable quality history, has not changed processes, or changed any subcontractors. DLA will not accept first article testing results outside the stated requirements.

6.4 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 these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.5 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.

6.6 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.

6.7 Subject term (key word) listing.

Power dissipation
VSWR

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force – 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5985-2015-027)

Review activities:
Army – AR, MI
Navy - AS, CG, MC, OS, SH
Air Force – 19

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.