INCH-POUND

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SUPERSEDING
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DETAIL SPECIFICATION

CONNECTORS, COAXIAL, RADIO FREQUENCY, SERIES TPS, GENERAL SPECIFICATION

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

1. SCOPE

1.1 This specification covers the following types of weatherproof connectors of the "TPS" series, designed to produce minimum discontinuities in a solid dielectric coaxial cable of a characteristic impedance of 50 ohms, up to a frequency of 10 Gigahertz and rated at 1,500 volts rms at sea level (see 6.4).

Connector, Receptacle, Electrical; UG–1364( )/U
Connector, Receptacle, Electrical; UG–1365( )/U
Connector, Plug, Electrical; UG-1366( )/U
Adapter, Connector; UG-1367( )/U
Adapter, Connector; UG-1368( )/U
Connector, Plug, Electrical; UG-1412( )/U
Connector, Receptacle, Electrical; UG-1413( )/U
Connector, Plug, Electrical; UG-1415( )/U
Connector, Plug, Electrical; UG-1416( )/U
Adapter, Connector; UG-1426( )/U
Adapter, Connector; UG-1427( )/U
Adapter, Connector; UG-1428( )/U
Adapter, Connector; UG-1429( )/U
Connector, Receptacle, Electrical; UG-1443( )/U
Connector, Receptacle, Electrical; UG-1471( )/U

1.2 Part or Identifying Number (PIN). The PIN consists of the applicable "UG" designation.

UG-XXXX( )/U

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center Columbus, Attn: VAI, 3990 East Broad Street, Columbus, Ohio, 43216-5000 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 5935
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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 this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

A-A-59588 – Rubber, Silicone, General Specification

DEPARTMENT OF DEFENSE

MIL-F-14072 - Finish for Ground Signal Equipment.

STANDARDS

FEDERAL

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

DEPARTMENT OF DEFENSE

MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-130	-	Identification Marking of U.S. Property
MIL-STD-202	-	Test Methods for Electronic and Electrical Component Parts.
MIL-STD-2073-1	-	Standard Practice for Military Packaging
MIL-STD-889	-	Dissimilar Metals

HANDBOOKS

DEPARTMENT OF DEFENSE

MIL-HDBK-454 - General Guidelines for Electronic Equipment.

(Unless otherwise indicated, copies of the above specifications, standards and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2. Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

ELECTRONICS COMMAND

SC-D-358720 - Dimensional Interchangeability Requirements for Male Connectors.
SC-D-358721 - Dimensional Interchangeability Requirements for Female Connectors.
SC-D-358722 - Outline and Mounting Dimensions for Receptacles, Jacks and Adapters.
SC-DL-358723 - Connector, Receptacle, Electrical UG-1364( )/U (Bulkhead Jack for RG-58 Cable).

SC-DL-358724 - Connector, Receptacle, Electrical UG-1365( )/U.
SC-DL-358725 - Connector, Plug, Electrical UG-1366( )/U (For RG-58 Cable).
SC-DL-358726 - Adapter, Connector UG-1367( )/U (Bulkhead, Female-Female, TPS to TPS).
SC-DL-358727 - Adapter, Connector UG-1368( )/U (Bulkhead, Female-Female, TPS to BNC).
SC-DL-358728 - Connector, Plug, Electrical UG-1412( )/U (For RG-223 Cable).
SC-DL-358729 - Connector, Receptacle, Electrical UG-1413( )/U (Bulkhead Jack for RG-223 Cable).
SC-DL-358730 - Connector, Plug, Electrical UG-1415( )/U (Jack for RG-58 Cable).
SC-DL-358731 - Connector, Plug, Electrical UG-1416( )/U (Jack for RG-223 Cable).
SC-DL-358732 - Adapter, Connector UG-1426( )/U (TPS-Female to N-Female).
SC-DL-358733 - Adapter, Connector UG-1427( )/U (TPS-Male to N-Male).
SC-DL-358734 - Adapter, Connector UG-1428( )/U (TPS-Male to N-Female).
SC-DL-835735 - Adapter, Connector UG-1429( )/U (TPS-Male to N-Male).
SC-DL-358736 - Connector, Receptacle, Electrical UG-1471( )/U.

(Copies of specifications, standards, and drawings required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer. Both the title and number or symbol should be stipulated when requesting copies.)

2.3 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on the date of invitation for bids applys.

CONSOLIDATED CLASSIFICATION COMMITTEE
Uniform Freight Classification

(Application for copies should be addressed to the Consolidated Classification Committee, 202 Union Station, Chicago 6, IL.)

2.4 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 SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A342 - Materials, Feebly Magnetic, Permeability of.
ASTM A484 - General Requirement for Stainless and Heat-Resisting Wrought Steel Product (except wire).
ASTM A582 - Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled or Cold-Finished.
ASTM B16 - Free-Cutting Brass Rod, Bar and Shapes for use in Screw Machines.
ASTM B36 - Brass Plate, Sheet, Strip and Rolled Bar.
ASTM B88 - Tube, Water, Seamless Copper.
ASTM B121 - Leaded Brass Plate, Sheet, Strip and Rolled Bar.
ASTM B124 - Copper and Copper Alloy Forging Rod, Bar and Shapes.
ASTM B139 - Phosphor Bronze Rod, Bar and Shapes.
ASTM B152 - Copper Sheet, Strip, Plate and Rolled Bar.
ASTM B194 - Copper Beryllium Alloy Plate, Sheet, Strip and Rolled Bar.
ASTM B196 - Copper Beryllium Alloy Rod and Bar.
ASTM B197 - Copper Beryllium Alloy Wire.

ASTM-B488 - Gold for Engineering Uses, Electrodeposited Coating of.
ASTM B700 - Electrodeposited Coatings of Silver for Engineering Uses.
ASTM D1457 - Polytetrafluoroethylene (PTFE) Molding and Extrusion Materials.
ASTM D2116 - FEP Fluorocarbon Molding and Extrusion Materials.

(Applications for copies should be addressed to the American Society For Testing And Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428.)

INSTITUTE FOR INTERCONNECTING AND PACKAGING ELECTRONIC CIRCUITS

J-STD-004 – Soldering Fluxes, Requirements For
J-STD-005 – Soldering Pastes, Requirements For
J-STD-006 – Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders For Electronic Soldering Applications, Requirements For

(Applications for copies should be addressed to the institute for Interconnecting and Packaging Electronic Circuits, 2215 Sanders Road, Northbrook, IL 60062.)

SOCIETY OF AUTOMOTIVE ENGINEERS

SAE- AMS-H-7199 – Heat Treatment of Wrought Copper-Beryllium Alloys, Process For
SAE-AMS-QQ-N-290 – Nickel Plating (Electrodeposited)

(Applications for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale PA, 15096-0001.)

3 REQUIREMENTS

3.1 General. The connectors covered by this specification shall be constructed using the drawings specified on the drawing and data lists referenced in 2.1 as a guide for informational purposes. Dimensional deviations from these drawings, except for the interchangeability, and outline and mounting dimensions specified in 3.10 and 3.11 respectively, shall be permitted. Compliance with the performance requirements of this specification, regardless of design details employed, shall determine the acceptability of these connectors.

3.2 Pre-production samples. The contractor shall furnish six pre-production samples of each type of connector for approval, provided the Invitation for Bids and the Contract requires samples (see 4.3).

3.3 Materials. Unless otherwise specified the material for each part shall be as specified herein. When a definite material is not specified, a material shall be used which will enable the connectors to meet the requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guarantee of the acceptance of the finished product.

3.3.1 Brass. Brass shall conform to ASTM B16, ASTM B36, ASTM B121 or ASTM B124.

3.3.2 Beryllium copper. Beryllium copper shall conform to ASTM B194, ASTM B196 or ASTM B197. Parts fabricated of copper beryllium shall be heat treated to Condition HT in accordance with SAE-AMS-H-7199 after machining and forming.

3.3.3 Insulator. The insulator shall be made of polytetrafluoroethylene (TFE) in accordance with class 1 of ASTM D1457 or fluorinated ethylene propylene (FEP) in accordance with ASTM D2116-81. The insulator shall have no visible flaws or cracks, and shall have a dielectric constant and dissipation factor (tangent of loss angle) not greater than 2.1 and 0.0002, respectively, when measured between 50 and 100 megahertz. Only clean, unreprocessed, virgin TFE or FEP shall be used.

3.3.4 Gasket. The gasket shall be made of silicone rubber conforming to Class II, Grade 50 or 60 of Specification A-A-59588 except that the oil-immersion test is not applicable.

3.3.5 Solder. Shall be in accordance with J-STD-006.

3.3.6 Dissimilar metals. Unless suitably protected against electrolytic corrosion, dissimilar metals, as defined in MIL-STD-889, shall not be used in intimate contact. Where it is necessary that any combination of such dissimilar metals be assembled, an interposing metal compatible to each shall be used.

3.3.7 Corrosion resistant materials. Materials shall be of the corrosion resistant types or shall be processed to resist the corrosion tests specified herein, after which the connectors shall be serviceable.

3.4 Design and construction. The design, construction, and physical dimensions of the mating ends of the connectors shall be as specified on Drawings SC-D-358720 and SC-D-358721, as applicable.

3.4.1 Silver plating. The silver plating on metal parts shall be not less than 0.0005 inch thick for exposed surfaces and 0.0002 inch thick for internal surfaces. An exposed surface shall be defined as a surface which is subjected directly to the environments in the mated condition (i.e. outer shall, coupling nut, etc.). Silver plating shall be in accordance with ASTM B700. Dimensions of metal parts shall include the plating.

3.4.2 Gold plating. All gold surfaces shall be gold plated to a minimum thickness of 0.00005 inch, in accordance with ASTM B488, type II, class I, over a 0.00005 inch minimum nickel underplate in accordance with SAE-AMS-QQ-N-290, class I.

3.4.3 Screw threads. Except for non-replaceable, structural parts, screw threads shall be in accordance with FED-STD-H28 and shall be NEF-2 fit after plating.

3.4.4 Contacts. The terminal ends of the contacts shall be hot tin-dipped or gold plated to facilitate soldering.

3.4.4.1 Male (pin) contacts. Male contacts shall be fabricated of half-hard brass material specified in 3.3.1.

3.4.4.2 Female contacts. The female center and outer contacts shall be fabricated of beryllium copper material as specified in 3.3.2.

3.5 Coupling sleeve rotation. The torque required to effect rotation of the coupling sleeve relative to the connector body shall be not greater than 0.75 inch-pound, when tested as specified in 4.7.6.

3.6 Cable retention. The cable properly attached to the connector shall withstand a minimum pull force of 45 pounds without breaking or movement from the initial fixed position, when tested as specified in 4.7.7.

3.7 Form over. Any form over in the connectors shall withstand the force specified without any evidence of damage to the form over, when tested as specified in 4.7.8.

3.8 Cable clamping. The method used for securing the cable to the connector shall not require the use of special tools, shall be simple, and shall require no combing of the braid to meet the cable retention requirements of 3.6.

3.9 Assembly instructions. Instructions for the assembly of cables to connectors shall be concise and shall be included in each package with the connector, as applicable.

3.10 Interchangeability dimensions. Like units and assemblies shall be physically and functionally interchangeable. Individual items shall not be hand-picked for fit or performance. Reliance shall not be placed on any unspecified dimension, rating, characteristic, etc. The interchangeability dimensions for the male and female connectors shall be as specified on Drawings SC-D-358720 and SC-D-358721.

3.11 Outline and mounting dimensions. The outline and mounting dimensions of the receptacles, jacks, and adapters, shall be as specified on Drawing SC-D-358722.

3.12 Marking. Connectors shall be marked in accordance with Standard MIL-STD-130 with the type designation and the manufacturer's code (UG-1366/U 95172). Marking shall be in depressed characters, 3/64 inch high, in a convenient place.

3.13 Dielectric withstanding voltage. There shall be no evidence of voltage breakdown between the center conductor properly positioned and the outer shall of the connectors, and between the center conductor and the braid of the cable for the adapters, when tested as specified in 4.7.3.

3.14 Insulation resistance. The insulation resistance between the center conductor and outer shall of mated connectors shall be a minimum of 100,000 megohms initially and after moisture resistance, when tested as specified in 4.7.4 and 4.7.14.

3.15 Contact resistance. The resistance measurements on all connectors (excluding adapters) of mated inner contacts and of mated outer contacts measured individually shall not exceed 0.0025 and 0.0003 ohms, respectively, and the contact resistance limits of the adapters shall be 0.005 and 0.0006 ohms, respectively, when tested as specified in 4.7.5.

3.16 Voltage standing wave ratio (VSWR). The voltage standing wave ratio of the mated connectors shall not exceed a value of 1.35:1 up to 10 Gigahertz, when tested as specified in 4.7.9.

3.17 Leakage. The insulation resistance between the center conductor and the outer shall of the mated connectors shall exceed 100,000 megohms initially and after the leakage test, when tested as specified in 4.7.4 and 4.7.10.

3.18 Durability. When tested as specified in 4.7.11 for 500 applications of matings and unmatings, the connectors shall meet the requirements of 3.13.

3.19 Temperature cycling. The connectors shall exhibit no evidence of cracking, streaking, corrosion, variation in dimensions, changes in operating and electrical characteristics, or any other damage, when tested as specified in 4.7.12.

3.20 Corrosion. The connectors shall exhibit no evidence of destructive corrosion or pitting, when tested as specified in 4.7.13. Destructive corrosion shall be defined as follows:

3.20.1 Mechanical. After exposure to the salt spray test (see 4.7.13), the coupling sleeve shall meet the requirements of 3.5.

3.20.2 Electrical. After exposure to the salt spray test (see 4.7.13), the contact resistance of the inner and outer contacts of the connectors shall be a maximum of 0.004 and 0.0005 ohms respectively, and the contact resistance limits of the adapters shall be 0.008 and 0.001 ohms respectively, when measured as specified in 4.7.5.

3.21 Moisture resistance. When tested as specified in 4.7.14, the connectors shall meet the requirements of 3.13 and 3.14.

3.22 Vibration and shock. When tested as specified in 4.7.15 and 4.7.16, there shall be no evidence of cracking, breaking, or loosening of any of the component parts of the connectors and there shall be no evidence of interruption of electrical contact of the mated connectors.

3.23 Workmanship. Workmanship shall be such as to permit the connectors to meet all the requirements of this specification. The connectors shall be processed in such a manner as to be uniform in quality, and shall be free from sharp edges and burrs, except where sharp edges are required for mechanical or electrical reasons. All solder joints shall be thoroughly cleaned.

4. VERIFICATION

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor 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 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. Preproduction inspection (does not include preparation for delivery), (see 4.3).
b. Inspections covered by subsidiary documents (see 4.4).
c. Conformance inspections.
   (1) Conformance inspection of equipment before preparation for delivery (see 4.5).
   (2) Conformance inspection of preparation for delivery (see 4.6).

4.3 Preproduction inspection. This inspection will be performed by the Government unless otherwise specified in the contract. It shall consist of the preproduction inspection specified in table I, the inspection specified in the subsidiary documents, covering the items listed in 4.4, and the inspection specified for group A, group B and group C (see tables II, III and IV respectively).

4.4 Inspection covered by subsidiary documents. The following shall be inspected under the applicable subsidiary documents as part of the inspection required by this specification and the inspection requirement specified in the contract.

Item	Where required
Brass	3.3.1
Copper Beryllium	3.3.2
TFE or FEP	3.3.3
Silicone Rubber	3.3.4
Solder	3.3.5
Dissimilar Metals	3.3.6
Silver Plating	3.4.1
Gold Plating	3.4.2
Screw Threads	3.4.3
Marking	3.12

4.5 Conformance Inspection of the connectors before preparation for delivery. The contractor shall perform the inspection specified in 4.4 and 4.5.1 through 4.5.4. This does not relive the contractor of his responsibility for performing any additional inspection which is necessary to control the quality of the product and to assure compliances with all specification requirements. The Government will review and evaluate the contractor's inspection procedures and examine the contractor's inspection records. In addition, the Government, at its discretion, may perform all or any part of the specified inspection, to verify the contractor's compliance with specified requirements (see 6.5). Test equipment for Government verification inspection shall be made available by the contractor.

4.5.1. Sampling plan (Group A). Table II tests shall be performed on a production lot basis. Samples shall be selected in accordance with Table IIa. 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 IIa 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.

4.5.1.1 Visual inspection (Group A inspection). Each connector shall be visually examined for completeness, workmanship, and identification requirements. Attention shall be given to those assemblies that require a gasket to determine the condition of the gasket. Gaskets missing, twisted, buckled, kinked, or damaged in any way shall be cause for rejection. Group A inspection shall be performed in any order acceptable to the Government.

TABLE II. Group A inspection.

Inspection	Requirement paragraph	Inspection paragraph
Visual and mechanical	3.3	4.7.1
Design and construction	3.4, 3.4.1, 3.4.2, 3.4.4, and 3.4.4	4.7.1
Cable clamping	3.8	4.7.1
Assembly instructions	3.9	4.7.1
Outline mounting dimensions	3.11	4.7.1
Marking	3.12	4.7.1
Workmanship	3.23	4.7.1
Interchangeability dimensions	3.10	4.7.2
Electrical		
Dielectric withstanding voltage	3.13	4.7.3
Insulation resistance	3.14	4.7.4
Contact resistance	3.15	4.7.5

1/ All electrical defects are considered major.

Table IIa. 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
10,001 to 35,000	77	35
35,001 to 150,000	96	40
150,001 to 500,000	119	40
500,001 to over	143	40

1/ Samples may be pulled from either the production lot itself or from samples pulled from the lot for major defect testing.

NOTES:

1. Major defect: A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

2. 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.

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

4.5.2.1 Group B sampling plan. A sample of parts shall be randomly 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. After screening and removal of defects, a new sample of parts shall be randomly selected and subjected to all tests in accordance with table IIIa. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification. Group B inspection shall be performed in any order acceptable to the Government.

4.5.2.1.1 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 connector deformed or otherwise damaged during testing shall not be delivered on the contract or order.

TABLE III. Group B inspection.

Inspection	Requirement paragraph	Inspection paragraph
Coupling sleeve rotation	3.5	4.7.6
Form over	3.7	4.7.8

1/ Only those dimensions specified (see 3.1), shall be checked.

Table IIIa. Inspection level.

Lot size			Sample size
1	to	8	5
9	to	15	5
16	to	25	5
26	to	50	5
51	to	90	5
91	to	150	11
151	to	280	13
281	to	500	16
501	to	1,200	19
1,201	to	3,200	23
3,201	to	10,000	29
10,001	to	35,000	35
35,001	to	150,000	40
150,001	to	500,000	40
500,001	to	over	40

4.5.3 Periodic inspection. Periodic inspection shall consist of Group C. Except where the results of these inspections show noncompliance with the applicable requirements, delivery of products which have passed Groups A and B shall not be delayed pending the results of these periodic inspections. Group C inspection shall consist of the inspections specified in Table IV. Group C inspection shall be made on sample units selected from inspection lots which have passed the Group A and B inspection.

4.5.3.1 Sampling for inspection of connectors, group C. Two connectors of each type shall be selected from the first production lot. Thereafter, 2 connectors of each type shall be selected for group C testing each month.

TABLE IV. Group C inspection.

Inspection	Requirement paragraph	Inspection paragraph
Cable retention	3.6	4.7.7
Voltage standing wave ratio	3.16	4.7.9
Durability	3.18	4.7.11

4.5.3.2 Noncompliance. If one or more sample units fails to pass Group C inspection, the lot shall be considered to have failed. If a sample fails to pass Group C inspection, the manufacturer shall notify the Contracting Officer and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which are manufactured under essentially the same materials and processes, and which are considered subjected to the same failure. Acceptance and shipment of product shall be discontinued until corrective action acceptable to the Contracting Officer has been taken. After the corrective action has been taken, Group C inspection shall be repeated on additional sample units (all tests and examinations, or the test which the original sample failed, at the option of the Contracting Officer). Groups A and B inspections

may be re-instituted; however, final acceptance and shipment shall be withheld until the Group C inspection has shown that the corrective action was successful. In the event of failure after re-inspection, information concerning the failure shall be furnished to the cognizant activity and the Contracting Officer.

4.5.4 Re-inspection of conforming Group B and C sample units. Unless otherwise specified, sample units which have been subjected to and passed group B or group C inspection, or both, may be accepted on the contract provided all damage is repaired and the sample units are re-subjected to and pass Group A inspection.

4.6 Conformance inspection of preparation for delivery. Preparation for delivery shall be inspected to determine conformance to the requirements of section 5.

4.7 Methods of examination and test. When mated pairs of connectors are specified, the test sample shall consist of the connector under test with an appropriate mating connector. Unless otherwise specified, all tests for adapters and receptacles shall be performed, mated with their associated mating connectors. The following tests are the referee tests in cases of dispute. Alternate test methods may be used with the approval of the preparing activity.

4.7.1 Visual and mechanical inspection. Connectors shall be inspected to verify that the materials, construction, cable clamping, assembly instructions, outline and mounting dimensions, marking and workmanship are in accordance with the applicable requirements (see 3.3, 3.4, 3.8, 3.9, 3.11, 3.12 and 3.23).

4.7.2 Inspection for interchangeability dimensions. The interchangeability dimensions of the male and female connectors shall be gaged at the specific points indicated on Drawing SC-D-358720 and SC-D-358721, to determine compliance with the interchangeability requirement of 3.10. When a listed dimension is not within specified limits, it shall be considered a major defect.

4.7.3 Dielectric withstanding voltage. Connectors mated and assembled to their appropriate cables, and adapters mated to a plug or jack, as applicable, assembled to its appropriate cable shall be tested in accordance with method 301 of Standard MIL-STD-202. The test voltage shall be raised from zero to 1500 volts rms at the rate of 100 volts per second and held at that voltage for one minute applied between the inner and outer conductors of the connector and between the center conductor and the braid of the cable for the adapters (see 3.13).

4.7.4 Insulation resistance. Connectors mated and assembled to their appropriate cables, and adapters mated to a plug, or jack, as applicable, assembled to its appropriate cable shall be tested in accordance with test condition A of Method 302 of Standard MIL-STD-202 (see 3.14). Application of voltage shall be between the center conductor and the outer shall of the mated connectors and between the center conductor and braid of the cable for the adapters.

4.7.5 Contact resistance. Connectors shall be tested in accordance with Method 307 of Standard MIL-STD-202. The following details shall apply:

(a) The electrical resistance of the mated connector contacts shall be calculated by measuring the potential drop across the mated contacts when carrying a current of 7.5 and 30 amperes in the inner and outer contacts, respectively (see 3.15).
(b) Before making the initial contact resistance measurement, the contacts shall be inserted and withdrawn five times.
(c) The connections to the contacts shall be soldered.
(d) The wire used for connecting the contacts to the driving circuit shall be of such physical size as to insure not more than a 30ºC temperature rise when the specified current is flowing in the circuit.

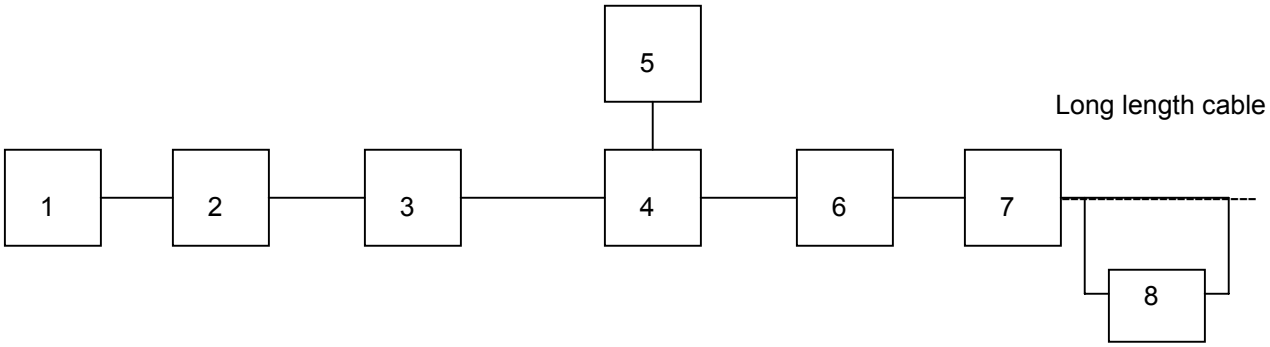
4.7.6 Coupling sleeve rotation. A torque shall be applied to the coupling sleeve about the axis of symmetry. The torque shall be measured with a 0 to 2 inch-pound torque wrench (see 3.5).

4.7.7 Cable retention. Connectors assembled to their appropriate cables shall be subjected for one minute to an axial force of 45 pounds pulling the connector away from the cable (see 3.6).

4.7.8 Form over. A withdrawal force of 100 pounds shall be applied wherever a form over exists. The pull shall be made for one minute along the longitudinal axis of the two joined parts (see 3.7).

4.7.9 Voltage standing wave ratio. The voltage standing wave ratio of the connectors, mated and assembled to their appropriate cables, and adapters mated to a plug or jack, as applicable, assembled to it's appropriate cable, with respect to a matched 50 Ohm system, shall be measured as follows (or any other method approved by the preparing activity), at increments of 1 GHz, in the range of frequencies from 1 GHz to 10 GHz, as shown in the block diagram:

(a) A long length of cable associated for connector use shall be assembled to the adapter. The length shall be adequate when shorting the far end of the cable does not shift the minimum of the standing wave. The connector assembly to be tested shall not be included in the initial calibration.
(b) At each frequency that the VSWR is to measured, the double stub tuner shall be set and locked so that the VSWR recorded on the standing wave indicator is 1.01 :1 or better.
(c) The cable shall be cut at a short distance from the adapter and a connector pair shall be inserted such that the insertion loss of the cable between the adapter and the connector pair is negligible.
(d) At each frequency, the proper pre-tuned stub tuner shall be inserted for that frequency. The VSWR reading obtained on the standing wave indicator shall be the cable-to-cable VSWR of the connector assembly



1. RF Signal Source
2. Frequency Meter
3. 10 dB attenuator pad
4. Slotted Section
5. Standing Wave Indicator
6. Double Stub Tuner
7. Transition to cable (when applicable)
8. Connector Pair under test

4.7.10 Leakage. Connectors mated and assembled to their appropriate cables shall be subjected to a gage pressure of 7.5 pounds per square inch for a period of one minute with the whole connector immersed in a tank of water at approximately 20ºC. The free end of the cable shall be sealed to prevent water ingress (see 3.17).

4.7.11 Durability. Connectors assembled to their appropriate cables shall be subjected to 500 applications of insertions and withdrawals at a rate not to exceed 500 cycles per hour. The insertions and withdrawals shall be conducted in a manner similar to that which the connectors will be subjected to in service (see 3.18).

4.7.12 Temperature cycling. Connectors mated and assembled to their appropriate cables shall be subjected to five temperature cycles in accordance with Method 102A of Standard MIL-STD-202 as follows:

Polytetrafluoroethylene cables	Polyethylene cables	Time duration
- 55ºC	- 55ºC	30 minutes
+ 25ºC	+ 25ºC	15 minutes
+ 200ºC	+ 85ºC	30 minutes
+ 25ºC	+ 25ºC	15 minutes

Adapters and receptacles shall be subjected to the temperature cycle of polytetrafluoroethylene cables (see 3.19).

4.7.13 Salt spray. Unmated connectors and connector contacts shall be tested in accordance with Method 101, Test Condition B, of Standard MIL-STD-202. At the conclusion of the test, the connectors and connector contacts, shall be washed, shaken, air blasted, and then permitted to dry for 24 hours at 40ºC. The connectors shall be examined for destructive corrosion as defined in 3.20.1. The connector contacts shall be examined for destructive corrosion as defined in 3.20.2.

4.7.14 Moisture resistance. Connectors mated and assembled to their appropriate cables shall be tested in accordance with Method 106A of Standard MIL-STD-202 except that the vibration sub-cycle shall not apply (see 3.21).

4.7.15 Vibration. Connectors mated and assembled to their appropriate cables, and adapters mated to a plug or jack, as applicable, assembled to its appropriate cable shall be tested in accordance with test condition A and C of Method 204A of Standard MIL-STD-202 except that the amplitude of the motion shall be a minimum of 20 gravity units. The connector assemblies shall be subjected to the specified cycles in each of the two mutually perpendicular directions. The test shall be conducted under the electrical load conditions of 4.7.16.1, or equivalent to monitor for interruptions of electrical contact of the mated connectors (see 3.22 and 4.7).

4.7.16 Shock. Connectors mated and assembled to their appropriate cables, and adapters mated to a plug or jack, as applicable, assembled to its appropriate cable, shall be tested in accordance with test condition B of Method 202A of Standard MIL-STD-202. The connector assemblies shall be subjected to six blows of 100 gravity units in each of the two perpendicular positions. The test shall be conducted under electrical load conditions. The test shall be capable of detecting a 10 microsecond response to discontinuities to monitor for interruptions of electrical contact of the mated connectors (see 3.22).

5. PACKAGING

5.1 Packaging requirement. 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 of Defense Agency, or within the Military Department's System Command. Packaging date 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 that may be helpful, but is not mandatory.)

6.1 Intended use. Connectors covered by this specification are intended for use in radio frequency applications up to 10 Gigahertz. They are designed for use with small size 50 ohm cables. Their use is governed by temperature limitations of their associated cables.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification and any amendment thereto
(b) Type required.
(c) Level of packaging and level of packing required for shipment (level A, level B or level C).
(d) The specific paragraphs of section 5 which are applicable to the particular procurement.
(e) Place of final inspection.

6.3 Group C inspection. Approval to ship may be withheld, at the discretion of the Government, pending the decision from the contracting officer on the adequacy of corrective action (see 4.5.3.2).

6.4 Nomenclature. The parentheses in the nomenclature will be deleted or replaced by a letter identifying the particular design; for example UG-1364W/U. The contractor should apply for the nomenclature in accordance with the applicable clause in the contract (see 1.1).

6.5 Verification inspection. Verification by the Government will be limited to the amount deemed necessary to determine compliance with the contract and will be limited in severity to the definitive quality assurance provisions established in this specification and the contract. The amount of verification inspection by the Government will be adjusted to make maximum utilization of the contractor's quality control system and the quality history of the product.

6.6 Subject term (key word) listing.

Nickel
VSWR (Voltage Standing Wave Ratio)

CONCLUDING MATERIAL

Custodian :
Army – CR
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5935-4431-000)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
3 The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER** **MIL-DTL-55235A**	**2. DOCUMENT DATE** **20030114**

3. DOCUMENT TITLE
Connector, Coaxial, Radio Frequency. Series TPS, General Specification

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include zip code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) DSN *(if applicable)*	7. DATE SUBMITTED *(YYYYMMDD)*

8. PREPARING ACTIVITY

a. NAME **Defense Logistics Agency** **Defense Supply Center, Columbus**	b. TELEPHONE *(Include Area Code)* (1) Commercial **614-692-0538** (2) DSN **850-0538**
c. ADDRESS *(Include Zip Code)* **DSCC-VAI** **P.O. Box 3990** **Columbus, Ohio 43216-5000**	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** **Defense Standardization Program Office (DLSC-LM)** **8725 John J. Kingman Road,Suite 2533** **Fort Belvoir, Virginia 22060-6621** **Telephone (703) 767-6888 DSN 427-6888**