INCH-POUND

MIL-DTL-5815H
8 February 2012
SUPERSEDING
MIL-DTL-5815G
8 January 2007

DETAIL SPECIFICATION

ANTENNA, AIRBORNE, UHF - BAND,

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 ultra high frequency (UHF) band airborne antenna.

1.2 Classification. Antennas covered by this specification are classified by style, as specified (see 3.1).

1.3 Part or identifying number (PIN). The part or identifying number (PIN) consists of the letter M, the basic number of the specification sheet, and an assigned dash number (see 3.1), as shown in the following:

M	5815/1	-01
Military designator	Specification sheet number	dash number

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

FEDERAL STANDARDS

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-5624 - Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-DTL-5815/1 - Antenna, Blade, UHF, AT-256A/ARC (Series N Connector).

Comments, suggestions or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, or emailed to Tubesamps@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.daps.dla.mil.

AMSC N/A FSC 5985

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-130 - Identification Marking of U. S. Military Property.
MIL-STD-202 - Electronic and Electrical Component Parts.
MIL-STD-889 - Dissimilar Metals.

DEPARTMENT OF DEFENSE HANDBOOKS

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

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

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, issues of these documents are those cited in the solicitation or contract (see 6.2).

NATIONAL CONFERENCE OF STANDARDS LABORATORIES (NCSL)

NCSL-Z540.3 - Laboratories, Calibration, and Measuring and Test Equipment.

(Copies of this document are available online at http://www.ncsli.org or from National Conference of Standards Laboratories (NCSL), 2995 Wilderness Place, Suite 107, Boulder CO 80301-5404.)

ASTM INTERNATIONAL (ASTM)

ASTM-G21 - Materials to Fungi, Synthetic Polymeric, Determining Resistance of.

(Copies of these documents are available online at http://www.astm.org or from ASTM International, 100 Bar Harbor Dr., P. O. Box C700, West Conshohocken, PA, USA, 19428-2959.)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE STD 149 - Test Procedures for Antennas.

(Copies should be obtained online at http://www.ieee.org or at IEEE, 345 E 47th Street, New York, New York 10017).

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 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 First article. Antennas furnished under this specification shall be products that have been tested in accordance with first article tests prescribed herein and that have been approved by the responsible design activity listed in 6.3.

3.3 General specification. The requirements for the specified, class of equipment apply as requirements of this specification with the exceptions and additions called out herein (see 3.1). In the event of conflict between this specification and the applicable documents (see 2.1 and 2.2), the requirements of this specification shall govern.

3.4 Material and finish. Material shall be as specified herein (see 3.1). Where a definite material is not specified, materials and finish used on construction of the antenna shall resist erosion of surfaces due to action of rain, ice crystals and other impinging particles at velocities as specified (see 3.1). Acceptance or approval of any constituent material shall not be construed as a guarantee of acceptance of the finished product.

3.4.1 Non-flammable material. Material shall be nonflammable.

3.4.2 Fungus. All materials shall be inert or fungus resistant in accordance with ASTM-G21.

3.4.3 Dissimilar metals. Unless suitably protected against electrolytic corrosion, dissimilar metals as defined in MIL-STD-889 shall not be in intimate contact.

3.4.4 Pure tin. The use of pure tin, as an under plate or final finish, is prohibited both internally and externally. Tin content of antenna components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.4).

3.5 Design and construction. Antenna shall be of the design, construction, and physical dimensions specified (see 3.1). Reinforcing the antenna by wrapping it with tapes or cloths that protrude outside the allowed antenna envelope is prohibited.

3.5.1 Connectors. The connectors shall be as specified (see 3.1). The material and gauging for the connectors shall conform to the requirements of the applicable specification.

3.5.1.1 Connector caps. All connectors shall be sealed with push-on plastic caps to prevent both damage and the entrance of moisture and foreign material during storage.

3.5.2 Screw threads. Screw threads shall be in accordance with FED-STD-H28.

3.5.3 Radiation power. The antenna shall be capable of handling the specified power (see 3.1), when subjected to any combination of environmental conditions specified herein.

3.5.4 Weight. The weight shall not exceed the limits specified (see 3.1).

3.6 Frequency range. The antenna shall provide performance over the specified frequency range (see 3.1).

3.7 Impedance. When antennas are tested as specified in 4.7.2, the impedance at the antenna input connector shall be such that the voltage standing wave ratio (VSWR), does not exceed the specified value (see 3.1).

3.8 Sampling probe impedance (when specified). When antennas are tested as specified in 4.7.3, the probe impedance shall be as specified (see 3.1).

3.9 Sampling probe attenuation measurements (when specified). When antennas are tested as specified in 4.7.4, the probe attenuation shall be as specified (see 3.1).

3.10 Radiation pattern. The antenna shall be designed for omnidirectional coverage. When the azimuthal radiation patterns specified in 4.7.5a are taken, the region extending completely around the antenna in azimuth (∅) shall, at each specified zenith angle (θ), be essentially omnidirectional with no nulls greater than 2 dB down from the maximum. When the vertical (great-circle) radiation patterns specified in 4.7.5b are taken, the gain at each zenith angle (θ) shall be no more than 1 dB below the gain of a matched quarter-wave stub antenna mounted in the same location.

3.11 Polarization. When antennas are tested as specified in 4.7.6, the axial ratio of the polarization ellipse for the test antenna in each of the specified test directions shall be equal to or greater than the axial ratio in the same direction for a matched quarter-wave stub antenna mounted in the location of the test antenna.

3.12 Static load. When antennas are tested as specified in 4.7.7, the antenna shall be capable of withstanding the specific static load (see 3.1).

3.13 Seal. When tested as specified in 4.7.8, the seal of the antenna shall be capable of withstanding the specified simulated altitude (see 3.1).

3.14 Resistance to solvents. When tested as specified in 4.7.9, antennas shall withstand direct contact with aromatic fuels and hydraulic liquid without causing electrical or mechanical deterioration.

3.15 High temperature exposure. After the high temperature exposure test specified in 4.7.10, the antenna shall show no physical damage, and the impedance shall not exceed the value specified (see 3.1).

3.16 Temperature shock. After the temperature shock test specified in 4.7.11.1, the antenna shall show no physical damage and the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.17 Barometric pressure (reduced). After the barometric pressure test specified in 4.7.11.2, the antenna shall show no physical damage and the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.18 Shock. After the shock test specified in 4.7.11.3, the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.19 Vibration. After the vibration test specified in 4.7.11.4, the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.20 Dust. After the dust test specified in 4.7.11.5, the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.21 Moisture resistance. After the moisture resistance test specified in 4.7.11.6, the impedance and sampling probe impedance shall not exceed the value specified (see 3.1).

3.22 Salt atmosphere. After the salt atmosphere test specified in 4.7.11.7, the antenna shall show no physical damage, and the impedance shall not exceed the value specified (see 3.1).

3.23 Marking. Antennas shall be marked in accordance with MIL-STD-130, as specified (see 3.1), and will include the PIN, contract, serial number, date code (year, month) and manufacturer's CAGE code.

Example: P/N M5815/1-XX
Type AA-BBB (when applicable)
Contract DSA XXXXXXX
Serial No. 4321
75-11 43215

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

3.25 Workmanship. Antenna shall be manufactured and processed in such a manner as to be uniform in quality, and the shell and mount of the antenna shall be free from tool marks, burrs, deep scratches, and other defects that will affect life, serviceability, aerodynamic drag, or appearance.

4. VERIFICATION

4.1 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 NCSL-Z540.3.

4.2 Classification of inspection. 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).

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

TABLE I. Materials inspection.

Material	Requirement paragraph	Applicable specification
Nonflammable	3.4.1	- - -
Fungus	3.4.2	ASTM-G21
Dissimilar metals	3.4.3	MIL-STD-889

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 First article inspection. First article inspection shall be 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 that 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 (see 6.3).

4.5.1 Sample size. Four antennas shall be subjected to first article inspection.

4.5.2 Inspection routine. The sample shall be subjected to inspections specified in table II, in the order shown. All sample units shall be subjected to group I inspection. Sample units shall then be divided into two groups of 2 units each. Sample units shall then be subjected only to the inspection indicated for that particular group. All units shall then be subjected to group IV.

TABLE II. First article inspection.

Examination or test	Requirement paragraph	Method paragraph
Group I		
Visual and mechanical examination	3.1, 3.3, 3.4 and 3.5	4.7.1
Marking	3.23	4.7.1
Workmanship	3.25	4.7.1
Impedance	3.7	4.7.2
Sampling probe impedance 1/	3.8	4.7.3
Sampling probe attenuation 1/	3.9	4.7.4
Group II		
High temperature exposure 1/	3.15	4.7.10
Temperature shock	3.16	4.7.11.1
Barometric pressure (reduced)	3.17	4.7.11.2
Shock	3.18	4.7.11.3
Vibration	3.19	4.7.11.4
Dust	3.20	4.7.11.5
Moisture resistance	3.21	4.7.11.6
Salt atmosphere 1/	3.22	4.7.11.7
Group III		
Radiation pattern	3.10	4.7.5
Polarization	3.11	4.7.6
Static load	3.12	4.7.7
Resistance to solvents	3.14	4.7.9
Group IV		
Seal	3.13	4.7.8

1/ When specified (see 3.1).

4.5.3 Failures. No failures are allowed.

4.6 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 antennas of the same part number, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.2 Group A inspection. Group A inspection shall consist of the examinations and tests specified in table III, in the order shown. The inspections shall be performed on all antennas in each production lot.

TABLE III. Group A inspection.

Examination or test	Requirement paragraph	Method paragraph
Visual and mechanical examination	3.1, 3.3, 3.4, 3.5	4.7.1
Marking	3.23	4.7.1
Workmanship	3.25	4.7.1
Impedance	3.7	4.7.2
Sampling probe impedance 1/	3.8	4.7.3
Sampling probe attenuation 1/	3.9	4.7.4
Seal	3.13	4.7.8

4.6.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with a random sample of items selected in accordance with table IV. Acceptance shall be based upon a zero defective sampling plan. No failures shall be permitted.

TABLE IV. Group A sampling plan.

Lot size	Sample size
1-13	100 percent
14-150	13
151-280	20
281-500	29
501-1200	34
1201-3200	42
3201-10,000	50
10,001-35,000	60
35,001-150,000	74
150,001-500,000	90
500,001 and over	102

4.6.1.2.2 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. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.2 Periodic inspection. Periodic 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 periodic inspections.

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

4.6.2.1.1 Sampling plan. Four sample units shall be selected every 6 months. Upon passing this inspection, the supplier may select 4 sample units every 12 months. If the second level of sampling is passed two successive times, the supplier may select 4 sample units every 24 months. In the event of a failure, sampling shall revert to the 6-month interval.

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

4.6.2.1.3 Disposition of sample units. Unless otherwise specified, sample units that have been subjected to group B inspection shall not be delivered on the contract or purchase order.

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 approving activity.

TABLE V. Group B inspection.

Examination or test 1/	Requirement paragraph	Method paragraph
Radiation pattern	3.10	4.7.5
Polarization	3.11	4.7.6
Static load	3.12	4.7.7
Seal	3.13	4.7.8
Resistance to solvents	3.14	4.7.9
High temperature exposure 1/	3.15	4.7.10
Temperature shock	3.16	4.7.11.1
Barometric pressure (reduced)	3.17	4.7.11.2
Shock	3.18	4.7.11.3
Vibration	3.19	4.7.11.4
Dust	3.20	4.7.11.5
Moisture resistance	3.21	4.7.11.6
Salt atmosphere	3.22	4.7.11.7

1/ When specified (see 3.1).

4.7 Methods of examination and test.

4.7.1 Visual and mechanical examination. Antennas shall be examined to verify that materials, design, construction, physical dimensions, finish, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.3, 3.4, 3.5, 3.23, and 3.25).

4.7.2 Impedance (see 3.7). Impedance measurements shall be made with the antenna mounted at the center of an 8-foot circular ground plane. The long axis of the antenna blade shall be perpendicular to the ground plane. A network analyzer or a slotted-line method may be used for the measurements. The slotted line shall be equipped with a tunable RF probe covering the appropriate frequency range. The impedance of the antenna shall be measured and recorded over the frequency range (see 3.1) at intervals no greater than 25 MHz. (Sweep frequency techniques may be used). The cable length between the antenna and the measuring equipment shall be no greater than six feet. Impedance measurements of the antenna shall be made after environmental tests as well as temperature extremes.

4.7.3 Sampling probe impedance (see 3.8). The impedance of the sampling probe shall be measured in accordance with 4.7.2, over the frequency range specified (see 3.1).

4.7.4 Sampling probe attenuation measurements (see 3.9). Attenuation measurements may be made with a network analyzer, or with the following method. A signal source shall be connected through a 50 ohm calibrated rf attenuator to the antenna input connector and the output of the sampling probe shall be connected to a calibrated receiving detector. The output of the probe shall be noted on the detector, after which, the antenna and probe shall be removed from the circuit and a suitable connector-adapter substitute therefore. Without changing power or sensitivity, the attenuator shall be adjusted to produce the reading noted previously on the detector. The difference in reading, in dB, on the attenuators with and without the antenna and probe in place shall be the probe attenuation. All rf interconnections shall be made by means of nominal 50 ohm coaxial cables (and connectors) and mismatch of both the signal generator and the detector used for making the measurements shall be reduced as low as possible. The attenuation of the antenna shall be measured over the frequency range (see 3.1) at interval no greater than 25 MHz. (Sweep frequency techniques may be used.) The cable length between the antenna and the measuring equipments shall not be greater than 6 feet. Each antenna shall be subjected to the attenuation tests both before and after completion of the environmental tests.

4.7.5 Radiation pattern (see 3.10). The radiation pattern shall be measured with the antenna mounted in the center of an eight-foot circular ground plane. The measurements shall be made on a continuously recording automatic antenna range. Care shall be taken to avoid errors due to reflections from the earth and from nearby objects (this does not prohibit the use of properly designed reflection ranges). The antenna under test shall be considered as positioned at the origin of the standard right-handed spherical coordinate system shown in IEEE STD 149, with the plane of the antenna blade in the x-z plane and the long axis of the antenna blade along the z-axis. The leading edge of the blade shall face the direction of increasing x and the top shall face the direction of increasing z. The ground plane shall be in the x-y plane of the coordinate system. For each sample antenna, polar decibel radiation patterns shall be recorded every 25 MHz from 225 to 400 MHz as follows:

a. Azimuth (conical) patterns ($0° \leq \Phi \leq 360°$) for $\theta = 60°$ and 90°.

b. Vertical (great-circle) patterns ($0° \leq \theta \leq 90°$) for $\Phi = 0°$, 90°, 180°, and 270°.

Like vertical patterns shall be made for comparison, using the same frequencies and power levels, for a matched quarter-wave stub antenna. The stub antenna shall be mounted in the same manner and location and with the same polarization as the test antenna. Each comparison pattern shall be taken immediately after, and recorded on the same sheet as, the corresponding test antenna pattern. There shall be only one test antenna pattern and one comparison pattern per sheet. A separate and distinctive recording trace shall be used such that, on the original and on any copies of the pattern recordings, it is possible to distinguish the test and the comparison antenna patterns. There shall be no change of equipment, equipment settings, personnel, or operating technique that would affect the consistency of the results. All patterns shall be clearly labeled with the sample number, the test frequency, and the angles involved. The labeling of the angles shall be such that, for any pattern, the specific values of θ and Φ associated with any measured point can be readily and unambiguously determined.

4.7.6 Polarization (see 3.11). The polarization performance shall be measured using the polarization-pattern method (see IEEE STD 149). The antenna shall be positioned and oriented in the same manner as for the radiation pattern measurements. The test frequency shall be 315 MHz. For each test sample, polarization patterns shall be obtained and from them the axial ratio of the polarization ellipse determined, for the following directions (θ, Φ):

($60°$, $0°$), ($60°$, $90°$), ($60°$, $180°$), ($60°$, $270°$)

($90°$, $0°$), ($90°$, $90°$), ($90°$, $180°$), ($90°$, $270°$)

For comparison, like polarization patterns shall be obtained and the axial ratio of the polarization ellipse determined for a matched quarter-wave stub antenna, using the same frequency and power level. The stub antenna shall be mounted in the same manner and location and with the same polarization as the test antenna. Each comparison pattern shall be taken as soon as practicable after the corresponding test antenna pattern such that there is no effect on the consistency of the results. Each polarization pattern shall be clearly labeled with the sample number (when applicable) and the direction involved. There shall be no change of equipment, equipment settings, personnel, or operating technique that would affect the consistency of the results.

4.7.7 Static load (see 3.12). The antenna shall be normally mounted on a fixture and a bladder draped on one side similar to figure 1. The bladder shall then be inflated until it is just making contact with the antenna surface. An air pressure reading shall then be taken and the internal air pressure shall then be increased to the specified pressure or to the pressure simulating the load pound (see 3.1) and held for 5 minutes. The pressure shall then be released and the same procedure repeated on the opposite side. This shall be considered as 1 cycle. The test shall be 2 cycles in duration. On completion of the second cycle the antenna shall be moved and carefully examined for deformation and structural failure. Impedance tests shall be made and the VSWR shall be as specified (see 3.1). When specified (see 3.1), the above test shall be applied to the other 2 sides.

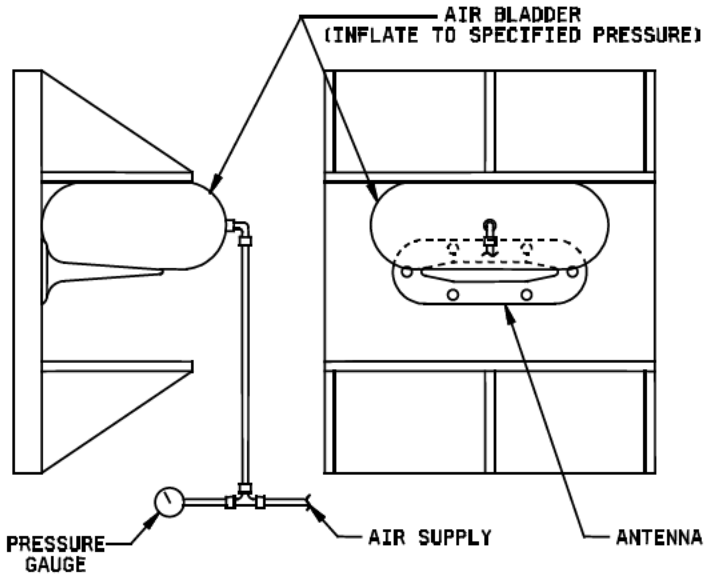

FIGURE 1. Static load test.

4.7.8 Seal (see 3.13). All samples shall be subjected to a seal test by the altitude chamber method. The antennas shall be fully submerged in a water-filled, transparent container. The test antennas may be covered with a mating cap simulating the mating connection. The chamber shall be evacuated to a pressure of 1.32 inches of mercury simulating an altitude of 70,000 feet and remain there for a minimum of 5 minutes. The chamber pressure shall then be raised to 2.5 inches of mercury simulating an altitude of 57,000 feet and maintained at that condition for 60 minutes. The chamber pressure shall then be raised to standard atmospheric pressure. The antennas, upon completion of the seal test, shall be removed and all excess moisture wiped from the antenna. Any evidence of leakage either by a flow of bubbles during evacuation or subsequent entrance of water shall be considered a failure. Immediately after the examination, the impedance test shall be made and the VSWR shall be as specified (see 3.1).

4.7.9 Resistance to solvents (see 3.14). Place the sample antenna, completely immersed, in the test liquid for 24 hours. Upon removal, shake or wipe excess surface liquid from the antenna and the impedance measured in accordance with 4.7.2 and 4.7.3. The above procedure shall be performed with each of the following test liquids: JP-5/JP-8 ST fuel (see MIL-DTL-5624) and hydraulic fluid.

4.7.10 High temperature exposure (see 3.15). The sample antennas shall be placed within a chamber and the internal temperature shall be raised to 220°C (428°F). The antenna shall remain in this environment for 2 hours; at the end of this time, the antenna shall be removed from the chamber and immediately measured for impedance.

4.7.11 Environmental tests (see 3.6). Environmental testing shall be in accordance with MIL-STD-202, in the sequence shown herein. Following each test, the antennas shall be tested for and must meet the requirements of 3.7 and 3.8. The following details shall apply:

4.7.11.1 Thermal shock (see 3.16). MIL-STD-202, Method 107, test condition C.

4.7.11.2 Barometric pressure (reduced) (see 3.17). MIL-STD-202, Method 105, test condition C. The antenna shall be mounted on a metal plate by its normal mounting means. Prior to reduction of pressure, the VSWR with the antenna mounted in the chamber shall be measured and recorded. After a minimum of 10 minutes at reduced pressure, the VSWR shall again be measured and recorded. The antenna shall be considered as passing the test if the VSWR does not change more than ± 20 percent from the initial reading. The VSWR requirement specified in 3.7 herein does not apply when the antenna is in the chamber.

4.7.11.3 Shock (see 3.18). MIL-STD-202, Method 213, test condition J, normal mounting means.

4.7.11.4 Vibration (see 3.19). MIL-STD-202, Method 204, test condition B. The antenna shall be mounted on the vibration table by its normal mounting means. Prior to vibration, the VSWR with the antenna mounted on the table shall be measured and recorded. During vibration, the VSWR shall be monitored to evaluate the effects of the test. The antenna shall be considered as passing the test if VSWR does not change more than ± 20 percent from the initial reading. The VSWR requirement specified in 3.7 herein does not apply when the antenna is on the vibration table.

4.7.11.5 Sand and dust (see 3.20). MIL-STD-202, Method 110.

4.7.11.6 Moisture resistance (see 3.21). MIL-STD-202 , Method 106. The antenna shall be mounted on a metal plate by its normal mounting means. Prior to testing, the VSWR with the antenna mounted in the chamber shall be measured and recorded. After the test, and while still at high humidity, the VSWR shall again be measured and recorded. The antenna shall be considered as passing this portion of the test if the VSWR does not change more than ± 20 percent from the initial reading. The VSWR requirement specified in 3.7 herein does not apply when the antenna is in the chamber. Following the measurement at high humidity, the impedance measurements specified in 4.7.11 above shall be performed in accordance with 3.6.2 and 3.6.3 of method 106.

4.7.11.7 Salt atmosphere (see 3.22). MIL-STD-202 Method 101, test condition B.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of 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 that may be helpful, but is not mandatory.)

6.1 Intended use. The antenna is a radiation element having an essentially omnidirectional vertically polarized radiation pattern intended for use with airborne communication.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number and date of this specification and of the applicable specification sheet and the complete PIN (see 3.1 and 6.5).

b. Packaging requirements (see 5.1).

c. Special marking, if required.

d. First article sampling, test, and evaluation requirements.

6.3 Approving activity. Information pertaining to first article inspection and approval of products covered by this specification should be obtained from the acquiring activity.

6.4 Tin whiskers. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers (see 3.4.4). For additional information on this matter, refer to ASTM-B545 (Standard Specification for Electrodeposited Coatings of Tin).

6.5 Subject term (key word) listing:

Communication	Polarization
Frequency	Radiation
Impedance	Seal
Nonflammable	

6.6 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. Environmentally Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at http://www.epa.gov/osw/hazard/wastemin/priority.htm. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of the materials on the list should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.7 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.

Custodians:
Army - CR
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5985-2012-006)

Review activities:
Army - AV
Air Force - 99

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.daps.dla.mil.