

PRODUCT SPECIFICATION

UHF SERIES CONNECTORS

NUMBER 108-12016

1.0 SCOPE

1.1 This specification contains performance requirements and test procedures for the UHF Connector Series. The connector is designed to accommodate various types of small and medium sized cables. Although the connector is non-constant impedance, the AMP\* Crimp Type Connector may be used at frequencies to 500 megacycles, and may be used at peak voltages to 500 volts.

2.0 APPLICABLE DOCUMENTS

2.1 The following specifications and standards form a part of this specification to the extent specified herein.

2.1.1 Test Specifications.

MIL-C-45662	Calibration of Standards
MIL-C-17	Radio Frequency Coaxial Cables
MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

3.0 REQUIREMENTS

3.1 Definitions. For the purpose of this specification, the following definitions shall apply.

3.1.1 Connector Assembly. A cabled connector mated to a suitable mating receptacle.

3.1.2 Plug. Contains a male pin.

3.1.3 Pin. Male inner contact which is housed within the plug.


3.1.4 Outer Shell. Braid or shield circuit of the connector.

3.2 Design and Construction. Connectors shall be of the design, construction, and physical dimensions specified on the applicable AMP Product Drawing.

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3.3 Materials and Finish. The materials utilized in the construction of the connectors and the finish or plating shall be as specified on the applicable AMP Product Drawing.

3.4 Functional Characteristics.

Frequency Range	0 to 500 MHz
Operating Voltage (Sea Level)	500 volts rms
Operating Temperature	-55° to +85°C

3.5 Performance. Connectors shall be designed to meet the mechanical and electrical performance requirements specified herein. To verify compliance to this specification, the required samples shall be tested and shall meet the minimum requirements specified.

3.5.1 Examination of Product. When test specimens are examined as specified in Paragraph 4.6.1, there shall be no evidence of physical damage or any other defect that could render the specimen unsuitable for test.


3.5.2 Insulation Resistance. When tested as specified in Paragraph 4.6.2 at 500 volts D.C., the resistance between the inner contact and the outer shell of the connector shall not be less than 5000 megohms.

3.5.3 Dielectric Withstanding Voltage. When tested as specified in Paragraph 4.6.3, a connector shall withstand 1500 volts rms, 60 Hz for a period of one minute.

3.5.4 Cable Retention. When tested as specified in Paragraph 4.6.4, the minimum cable retention of a plug shall not be less than specified in Table I.

TABLE I

Cable Type	Cable Retention - Pounds
RG 58 C/U	60
RG 59 B/U	75
Belden 8281	100
Western Electric 724	100
RG 8, 9, 213, and 214	150

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- 3.5.5 Physical Shock. When tested as specified in Paragraph 4.6.5, there shall be no evidence of cracking, breaking, or loosening of any component parts of the connector, nor shall there be any interruption of continuity greater than 10 microseconds.
- 3.5.6 Vibration. When tested as specified in Paragraph 4.6.6, there shall be no evidence of cracking, breaking, or loosening of any component parts of the connector, nor shall there be any interruption of continuity greater than 10 microseconds.
- 3.5.7 Temperature Cycling. When tested as specified in Paragraph 4.6.7, there shall be no evidence of loosening of component parts or physical damage which could affect the performance of the connector.
- 3.5.8 Salt Spray. When tested as specified in Paragraph 4.6.8, there shall be no evidence of corrosion or pitting which could affect the mechanical or electrical performance of the connector.
- 3.5.9 Connector Durability. After 500 cycles of mating and unmating as specified in Paragraph 4.6.9, connectors shall show no signs of severe mechanical damage.
- 3.5.10 Voltage Standing Wave Ratio. When tested as specified in Paragraph 4.6.10, the VSWR of a connector shall not exceed the following values, as determined by cable type and frequency.

Cable Type	VSWR		
	to 100 MHz	to 300 MHz	to 500 MHz
RG 58/U, 59/U	1.15	1.35	1.55
RG 8, 9, 213, 214	1.05	1.10	1.10

4.0 QUALITY ASSURANCE PROVISIONS

- 4.1 General Provisions. The quality provisions specified herein shall be employed in the manufacturing and testing of this product to assure normal production units meet the performance requirements of this specification.

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4.2 Classification of Test.

- (A) Qualification Inspection (See 4.4)
- (B) Quality Conformance Inspection (See 4.5)

4.3 Test Condition.

- 4.3.1 Measurements. Measurements shall be made with instruments that have been calibrated and certified in accordance with specification MIL-C-45662.
- 4.3.2 Laboratory Conditions. Unless otherwise specified, standard test conditions shall conform to the requirements of MIL-STD-202, Section 2, General Requirements.
- 4.3.3 Coaxial Cable. Coaxial cable used for testing shall be manufactured in accordance with specification MIL-C-17.

4.4 Qualification Inspection.

- 4.4.1 Sample Selection. Connectors selected for testing shall be representative of current design and construction. Preparation of test samples shall be conducted in accordance with AMP Instruction Sheets governing assembly and crimping technique.
- 4.4.2 Test Procedure. Qualification Inspection shall be conducted in accordance with Table II in the sequence specified. Test Groups I and II shall consist of 10 connectors each, and Test Group III shall consist of 5 connectors.
- 4.4.3 Test Sample Preparation. Connectors, which will be subjected to vibration, shock, and temperature cycling, shall be assembled to 12-inch lengths of cable in a manner that will facilitate series wiring for the required tests.


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TABLE II

Qualification Inspection Sequence			
Test or Examination	Test Group and Sequence		
	I	II	III
Examination of Product	1	1	1
Insulation Resistance	2		
Dielectric Withstanding Voltage	3-7		
Cable Retention		3	
Physical Shock	4		
Vibration	5		
Temperature Cycling	6		
Salt Spray		2	
Connector Durability	8		
Voltage Standing Wave Ratio			2


4.5 Quality Conformance Inspection.

4.5.1 Sample Selection. Unless otherwise specified, sampling procedures shall be in accordance with MIL-STD-105. Sampling and Acceptable Quality Levels shall be as specified in the applicable AMP Quality Specification. Dimensional requirements shall be in accordance with the applicable AMP Product Drawing.

4.6 Test Methods.

4.6.1 Examination of Product. Test samples shall be thoroughly examined to insure that they have been properly assembled in accordance with the manufacturer's instructions. They shall show no evidence of physical defects or being otherwise unfit for testing.

4.6.2 Insulation Resistance. Plugs shall be tested in accordance with Method 302 of MIL-STD-202 with a megohmmeter producing a test potential of 500 volts D.C. The test voltage shall be applied between the outer shell and the inner contact for a period of 2 minutes before recording insulation resistance. Test samples shall meet the requirements specified in Paragraph 3.5.2.

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- 4.6.3 Dielectric Withstanding Voltage. Plugs shall be tested in accordance with Method 301 of MIL-STD-202. The test voltage shall be applied between the outer shell and the inner contact at a rate of 100 volts RMS per second, and shall be held at the test voltage specified in Paragraph 3.5.3 for a period of one minute.
- 4.6.4 Cable Retention. Plugs assembled to appropriate cable shall meet the requirements specified in Table I when pulled on a tensile machine with a head speed of 1 inch per minute. To assure that both center conductor and braid are pulled simultaneously, the outer jacket shall be removed from the cable a distance of 2 inches from the unterminated end. The braid or shield shall be pushed back to expose the inner dielectric. The dielectric shall be removed, with caution, for a distance of 1 inch exposing the inner conductor. The braid shall be pulled back tightly to its original position and twisted evenly around the exposed inner conductor. Solder shall be applied to the exposed conductor to insure that the outer shield and the inner conductor are securely joined.
- 4.6.5 Shock. Mated connector assemblies shall be subjected to 100G deceleration in accordance with Method 213, Test Condition I of MIL-STD-202. The connectors shall withstand 8 shocks in each of the 2 planes perpendicular to their major axis. During the test, all connectors shall be wired in series and a D.C. current of 0.1 ampere shall be applied. Instrumentation shall be incorporated to detect electrical discontinuities as short as 10 microseconds. At the conclusion of the test, the connectors shall meet the requirements specified in Paragraph 3.5.5.
- 4.6.6 Vibration. Mated connector assemblies, mounted as shown in Figure I, shall be subjected to vibration in accordance with Method 204, Test Condition A of MIL-STD-202 in each of the two planes perpendicular to their major axis. During the test, all connectors shall be wired in series and a D.C. current of 0.1 ampere shall be applied. Instrumentation shall be incorporated to detect electrical discontinuities as short as 10 microseconds. At the conclusion of the test, the connectors shall meet the requirements specified in Paragraph 3.5.6.


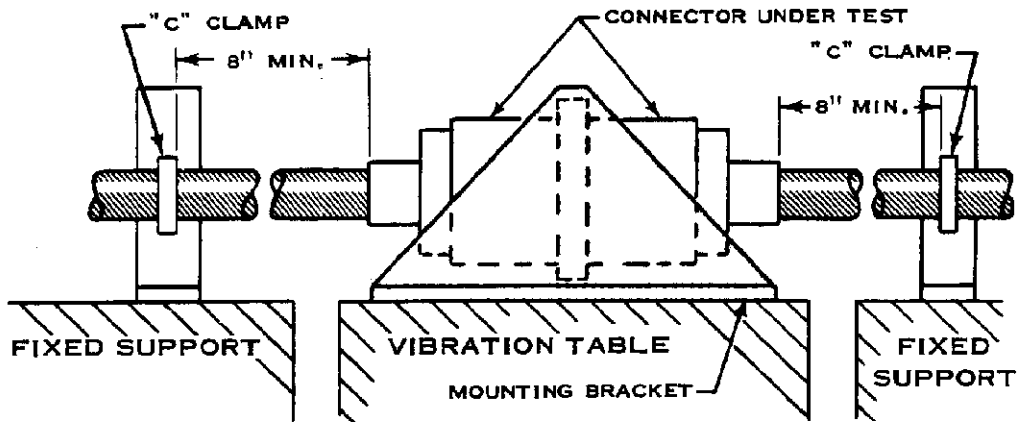

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FIGURE I



- 4.6.7 Temperature Cycling. Mated connector assemblies shall be subjected to Condition B of Method 102 of MIL-STD-202 for a total of 5 cycles. Upon completion, the connectors shall meet the requirements specified in Paragraph 3.5.7.
- 4.6.8 Salt Spray. Unmated connectors shall be subjected to Condition B of Method 101 of MIL-STD-202. At the conclusion of the exposure, the connectors shall be washed, shaken, air blasted, and then permitted to dry for 24 hours at 40°C. The connectors shall meet the requirements specified in Paragraph 3.5.8.
- 4.6.9 Connector Durability. Connectors shall be mated and unmated with a suitable mating part for a total of 500 cycles. The coupling mechanism shall be fully engaged and disengaged every 100th cycle. Upon completion of test, connectors shall meet the performance requirements of Paragraph 3.5.9.
- 4.6.10 Voltage Standing Wave Ratio. Connectors shall be tested for VSWR using the Impedance Bridge Method and/or the Swept, Slotted Line Method, as applicable, through a frequency range of 10 to 500 MHz. Connectors shall meet the performance requirements of Paragraph 3.5.10.

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