Connector, Coaxial, 50 & 75 Ohm Commercial BNC Dual Crimp Type

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP* 50 and 75 ohm BNC commercial dual crimp type decoupled coaxial bulkhead jack connectors.

1.2. Definitions

For the purpose of this specification, the following definitions shall apply:

A. Connector assembly: Consists of mated plug and jack terminated to their respective cable.
B. Connector: May be either plug or jack as described below.
C. Plug (Male): Contains male center contact and a rotating collar for locking purposes.
D. Jack (Female): Contains female center contact and may be either cable, panel or bulkhead mounted types.
E. Feed thru adapter: Contains female center contact either end.

1.3. Qualification

When tests are performed on subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the document applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification shall take precedence.

2.1. AMP Documents

A. 109-1: General Requirements for Test Specifications
B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents .
D. 501-304: Test Report

2.2. Military Specifications

A. MIL-C-17: Cable, Coaxial, Radio Frequency
B. MIL-C-39012: Connectors, Coaxial, RF, General Specification for

| Indicates change

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

3.2. Materials

A. Body: Brass, zinc or copper alloy, nickel plating
B. Contact: Beryllium copper or brass, gold over nickel plating
C. Dielectric: Polypropylene, polytetrafluorethylene or polymethylpentene
D. Ferrule: Copper, tin-lead plating
E. Housing: Polyester, PBT

3.3. Ratings

A. Voltage: 500 volts (rms) at sea level
B. Temperature: -65 to 85°C
C. Nominal Impedance: 50 or 75 ohm
D. Frequency Range: 0 to 2 GHz

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per AMP Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance.	Center contact: ΔR 1.5 milliohms maximum. Braid: ΔR 3 milliohms maximum.	AMP 109-6-1. Subject mated contacts to 50 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	5000 megohms minimum.	AMP Spec 109-28-4. Test between center contact and braid.
Dielectric withstanding voltage.	1.5 kvac at sea level.	AMP Spec 109-29-1. Test between center contact and braid.
RF high potential.	1000 volts (rms) at 5 MHz.	AMP Spec 109-29-4. Test between center contact and braid.

Figure 1 (cont)

Test Description	Requirement	Procedure
Corona.	5 picocoulombs maximum discharge at 375 volts (rms).	AMP Spec 109-40. Test corona between center contact and braid at 70000 feet simulated altitude.
Capacitance.	± 10% per applicable product drawing.	AMP Spec 109-47, Condition A. Test between center contact and braid.
Shielding effectiveness.	-40 dB minimum up to 1.5 GHz. -20 dB minimum 1.5 to 2 GHz.	AMP Spec 109-90. Measure shielding effectiveness of mated pairs between 1 and 2 GHz.
RF insertion loss.	.15 dB maximum.	AMP Spec 109-174-2. Measure RF insertion loss at 2 GHz.
Voltage standing wave ratio.	1.30 maximum.	AMP Spec 109-181. Measure VSWR of mated pairs between .5 and 2 GHz.
MECHANICAL		
Vibration, sinusoidal.	No discontinuities of 10 microseconds or longer duration. See Note (a).	AMP Spec 109-21-3. Subject mated samples to 15 G's between 10-2000-10 Hz traversed in 20 minutes. 3 hours in each of 3 mutually perpendicular planes.
Physical shock.	No discontinuities of 10 microseconds or longer duration. See Note (a).	AMP Spec 109-26-9. Subject mated samples to 100 G's sawtooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note (a).	AMP Spec 109-27. Mate and unmate samples for 500 cycles at maximum rate of 12 cycles per minute.
ENVIRONMENTAL		
Thermal shock.	See Note (a).	AMP Spec 109-22. Subject mated samples to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note (a).	AMP Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH with cold shock.

Figure 1 (cont)

Test Description	Requirement	Procedure
Temperature life.	See Note (a).	AMP Spec 109-43. Subject mated samples to temperature life at 85°C for 96 hours.
Mixed flowing gas.	See Note (a).	AMP Spec 109-85-2. Subject mated samples to environmental class II for 14 days.

(a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Examination of product	1,7	1,5	1,5	1,9	1,5	1,4
Termination resistance	2,6	2,4	2,4			
Insulation resistance				3,7		
Dielectric withstanding voltage				4,8		
RF high potential						3
Corona						2
Capacitance				2		
Shielding effectiveness					4	
RF insertion loss					2	
Voltage standing wave ratio					3	
Vibration	4					
Physical shock	5					
Durability	3					
Thermal shock				5		
Humidity-temperature cycling				6		
Temperature life		3				
Mixed flowing gas			3(c)			

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) Precondition samples with 10 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall consist of 3 connector pairs with each connector crimped to a 12 inch length of RG179A/U cable for 75 ohm connectors and RG58/U, RG58A/U, RG58B/U or RG58C/U for 50 ohm connectors. Cable used for testing shall conform to MIL-C-17.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 2.

4.2. Requalification Testing

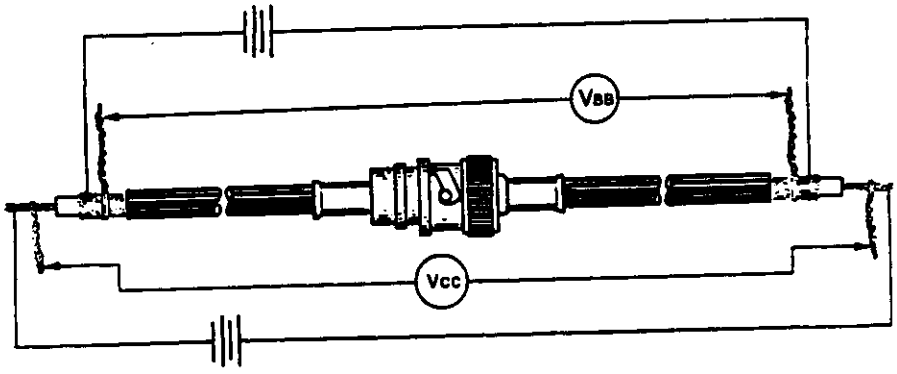
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.



Note: (a) V_{BB} is outer contact measurement.
(b) V_{CC} is inner contact measurement.
(c) Measure 3 feet of cable and calculate milliohms per inch. Measure distance between probes on specimens and subtract equal distance of cable resistance to obtain actual contact resistance.
(d) Establish base resistance measurements. Measure ΔR after test sequence.

Figure 3
Termination Resistance Measurement Points