



Adapters, BNC, Commercial

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP* coaxial BNC commercial adapters.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the 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, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the 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. 501-181: Test Report

2.2. Military Specification

MIL-A-55339: Adapters, Connector, Coaxial Radio Frequency, General Specification For

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

- A. Contact: Beryllium copper, phosphor bronze, or brass; gold, silver, or tin-lead plating
- B. Dielectric: Teflon, polymethylpentene or polypropylene
- C. Shell: Brass or zinc; silver or nickel plating

3.3. Ratings

- A. Voltage: 500 vac
- B. Temperature: -55 to 85°C
- C. Characteristic Impedance: 50 or 75 ohms
- E. Frequency Range: 0 to 4 GHz

3.4. Performance and Test Description

Product is designed to meet the 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.	ΔR 1.5 milliohms maximum for center contacts. ΔR 3 milliohms maximum for outer contacts.	AMP 109-6-1. Subject mated contacts assembled in housing 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 adjacent contacts of unmated samples.
Dielectric withstanding voltage.	1500 vac at sea level.	AMP Spec 109-29-1. Test between adjacent contacts of mated samples.
RF high potential.	1500 vac at 5 MHz for 1 minute.	AMP Spec 109-29-4. Test between center and outer contacts of mated samples.
Corona.	Less than 5 picocoulombs at 375 volts rms minimum.	AMP Spec 109-40. Measure corona at 70000 feet simulated altitude.
Shielding effectiveness, 75 ohms.	-40 dB minimum up to 1.5 GHz. -20 dB minimum up to 2 GHz.	AMP Spec 109-90. Measure shielding effectiveness between 1 and 2 GHz.
RF insertion loss.	.15 dB maximum at 4 GHz.	AMP Spec 109-174-2. Measure RF insertion loss at 4 GHz.
Voltage standing wave ratio.	1.25 maximum.	AMP Spec 109-181. Measure VSWR between .5 and 4 GHz.

Figure 1 (cont)

Test Description	Requirement	Procedure
RF leakage, 50 ohms.	55 dB maximum.	AMP Spec 109-182. Measure RF leakage at 4 GHz for brass body and 500 MHz for zinc body.
MECHANICAL		
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-3. Subject mated samples to 15 G's between 10-2000 Hz traversed in 20 minutes. 3 hours in each of 3 mutually perpendicular planes.
Physical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	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.	AMP Spec 109-27. Mate and unmate samples for 500 cycles at maximum rate of 12 cycles per minute.
Mating force/torque.	3 pounds maximum. 2.5 inch pounds maximum.	AMP Spec 109-42, Conditions A and B. Measure force necessary to mate samples at maximum rate of 1 inch per minute.
Unmating force/torque.	3 pounds maximum. 2.5 inch pounds maximum.	AMP Spec 109-42, Conditions A and B. Measure force necessary to unmate samples at maximum rate of 1 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated samples to temperature life at 85°C for 96 hours.

Figure 1 (cont)

AMP

Test Description	Requirement	Procedure
Mixed flowing gas.	See Note.	AMP Spec 109-85-2. Subject mated samples to environmental class II for 14 days.

NOTE

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	1,11	1,5	1,5	1,8	1,5	1,4
Termination resistance	4,8	2,4	2,4			
Insulation resistance				2,6		
Dielectric withstanding voltage				3,7		
RF high potential						3
Corona						2
Shielding effectiveness, 75 ohms					3	
RF insertion loss					2	
Voltage standing wave ratio					4	
RF leakage, 50 ohms					3	
Vibration	6					
Physical shock	7					
Durability	5					
Mating force	2,10					
Unmating force	3,9					
Thermal shock				4		
Humidity-temperature cycling				5		
Temperature life		3				
Mixed flowing gas			3			

NOTE

- (a) See Para 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.

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 each consist of a minimum of 5 samples.

B. Test Sequence

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

4.2. Requalification Testing

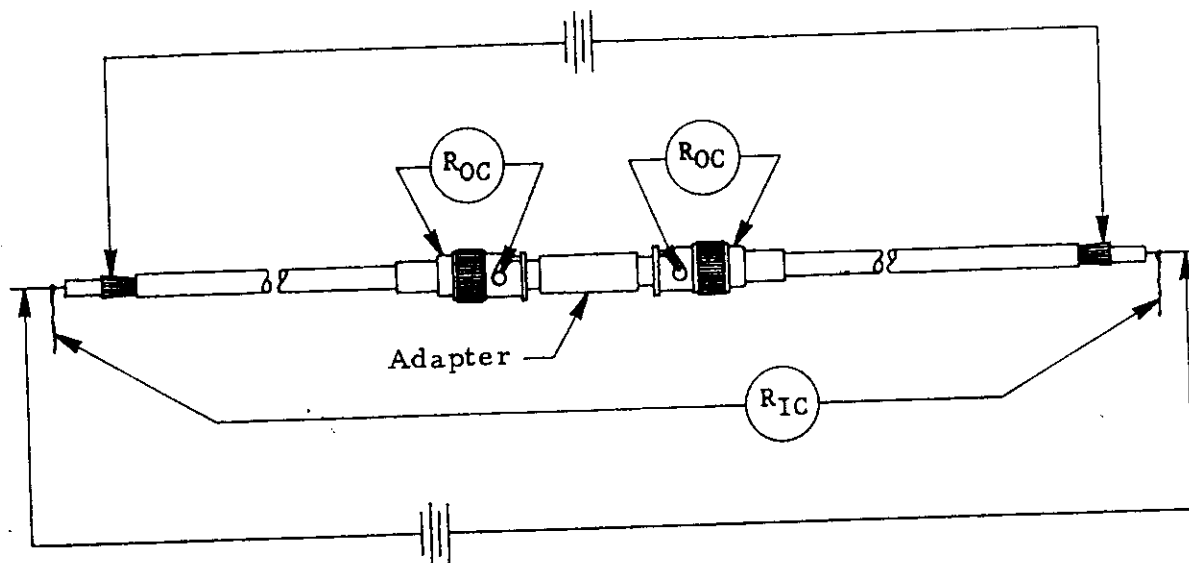
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the 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 the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

**NOTE**

- (a) R_{OC} is outer contact measurement.
- (b) R_{IC} is inner contact measurement.
- (c) Also, measure 3 feet of wire and calculate milliohms per inch. Measure distance between probes on samples and subtract equal distance of wire resistance to obtain actual contact resistance.
- (d) Establish base resistance measurements. Measure ΔR after test sequence.

Figure 3
Termination Resistance Measurement Points