

## PRODUCT SPECIFICATION

### 1. SCOPE

#### 1.1. Content

This specification covers the performance, tests and quality requirements for the AMP\* Undercarpet Coaxial Cable Assemblies.

#### 1.2. Qualification

When tests are performed on the subject product line, the 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. 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 Specifications

- 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. 114-6014: COAXICON\* RF Connector to Undercarpet Flat Coaxial Cable, Application of
- D. 108-6039: Cable, Coaxial, Undercarpet
- E. 108-12020: BNC Series Coaxial Connectors

### 3. REQUIREMENTS

#### 3.1. Design and Construction

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

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A	Revise per ECN AA-4243	<i>FR</i>	12/17 87	LOC B	NO 108-6045	REV A	
O	Release per ECN AA-4199	<i>FR</i>	9/9 87	SHEET 1 OF 7 CABLE ASSEMBLY, UNDERCARPET COAXIAL			
LTR	REVISION RECORD	APP	DATE				

### 3.2. Materials

- A. Cable and Connectors: As specified on applicable product drawings
- B. Shrink Tubing: PVC

### 3.3. Ratings

- A. Current: 0.5 ampere dc or rms
- B. Operating Temperature: -55° to 85°C

### 3.4. Performance and Test Description

Cable assemblies shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and AMP Spec 114-6014.	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination Resistance, Dry Circuit	690 milliohms maximum for both the center conductor and shield.	Subject mated connector assemblies to 20 mv open circuit at 100 ma maximum current; AMP Spec 109-6-6.
Continuity	No discontinuities greater than 1 microsecond.	Gently flex cable terminations $\pm 45^\circ$ . Check continuity both center pin to center pin and connector shell to connector shell.
Insulation Resistance	1000 megohms minimum.	Test between center contact and shield of unmated connector assembly; AMP Spec 109-28-4.
MECHANICAL		
Vibration (a)	No discontinuities greater than 1 microsecond.	Subject mated connector assembly to 15 G's, 10-2000 Hz with 100 ma current applied; AMP Spec 109-21-4.

Figure 1 (cont)

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Test Description	Requirement	Procedure
Physical Shock (a)	No discontinuities greater than 1 microsecond.	Subject mated connector assembly to 50 G's sawtooth in 10 milliseconds; 3 shocks in each direction applied along the 3 mutually perpendicular planes total 18 shocks; AMP Spec 109-26-7.
Crimp Tensile	10 pounds minimum. No loss of center contact continuity.	Apply axial load to cable in a direction away from rigidly held connector; AMP Spec 109-16.
Flexing	15 cycles minimum.	Subject jack connector to cycles of 180° rotation with 1 pound weight attached to cable until continuity is lost between drain wire and connector body, see Figure 3.
Twisting	3 revolutions minimum.	Subject jack connector to revolutions of 360° with 1 pound weight attached to cable until continuity is lost between drain wire and connector body, see Figure 4.
Terminal Retention	Center contact displacement less than .03 inch.	Apply axial load of 3 pounds to center contact of terminal plug, see Figure 5.
Bending	Less than 5% change in impedance, measured by TDR.	Bend transition section of cable over a .50 inch diameter rod, see Figure 6.
ENVIRONMENTAL		
Humidity-Temperature Cycling	$\Delta R$ 2 milliohms maximum termination resistance.	Subject mated connector assembly to 10 humidity-temperature cycles between 25° and 65°C at 95% RH; AMP Spec 109-23, method III, cond B, less step 7b.
Figure 1 (cont)		
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Test Description	Requirement	Procedure
Temperature Life (a)	$\Delta R$ 2 milliohms maximum termination resistance.	Subject mated connector assembly to temperature life; AMP Spec 109-43, test level 3, test duration C, no electrical load applied.

(a) Shall remain mated and show no evidence of damage, cracking or chipping.

Figure 1 (end)

### 3.6. Cable Harness Tests and Sequences

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Examination of Product	1	1	1	1	1
Termination Resistance, Dry Circuit			3,5	3,5	3,5
Continuity	2	2,9	2	2	2
Insulation Resistance (c)	3,5,7	3			
Vibration (c)	4	4			
Physical Shock (c)	6	5			
Crimp Tensile (d)		10			
Flexing (d)		8			
Twisting (d)		7			
Terminal Retention (d)		6			
Bending (d)					4
Humidity-Temperature Cycling (d)			4		
Temperature Life (d)				4	

(a) See Para 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

(c) See Para 4.1.C.(2)

(d) See Para 4.1.C.(1)

Figure 2

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#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Sample Selection

Cable assemblies shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test groups 1 thru 5 shall consist of 15 mated 4 foot assemblies in each group. Each terminated cable section to be 2 feet long.

###### B. Test Sequence

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

###### C. Acceptance

- (1) Requirements put on test samples, as indicated in the requirements portion of Figure 1, exist as either the upper or lower statistical tolerance limit (95% confidence, 99% reliability). All samples tested in accordance with this specification shall meet the stated tolerance limit.
- (2) No failures in sample size of 75 to assure 95% confidence, 95% reliability.
- (3) 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.

##### 4.2. Quality Conformance Inspection

The applicable AMP 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.

##### 4.3. Retention of Qualification

If, in a 3 year period, no changes to the product or process occur, the product shall be subjected to the 1, 2 groups of the testing described in the test sequence, see Figure 2. Justification for exceeding this time limit shall be documented and approved by the division manager.

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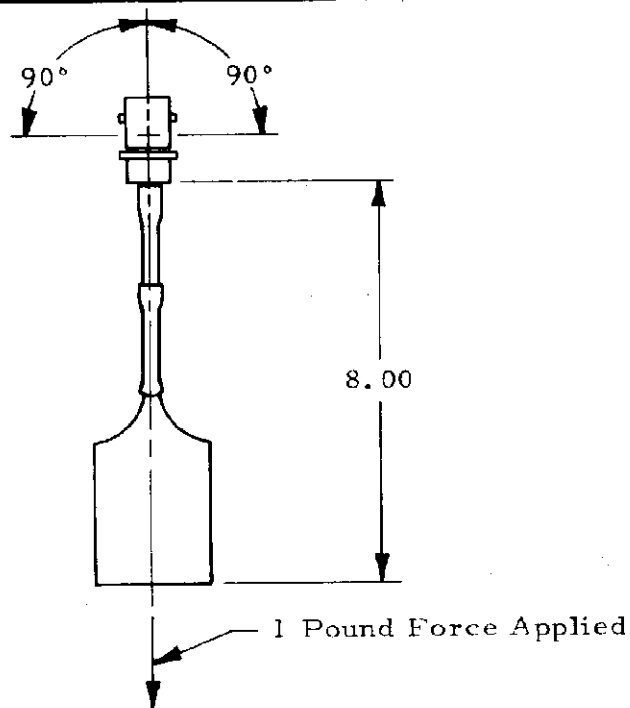


Figure 3  
Flexing

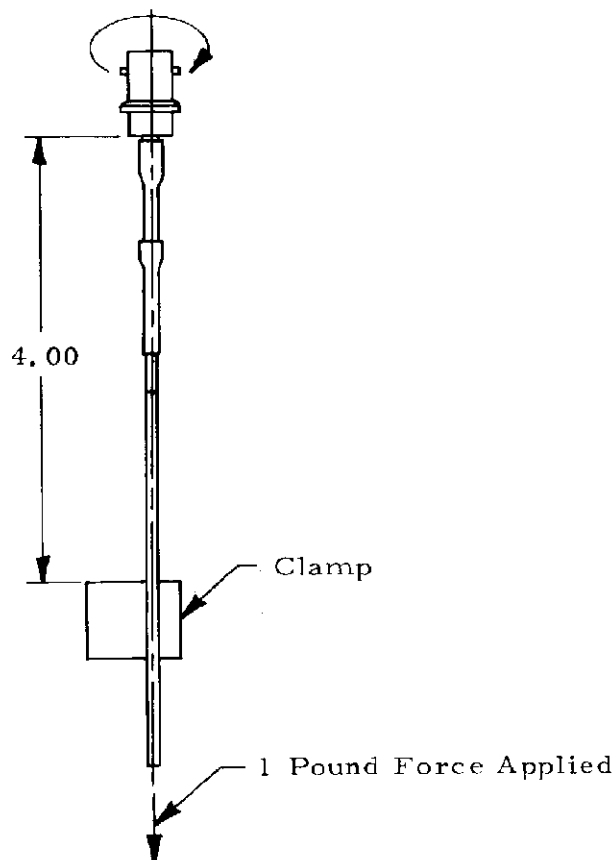


Figure 4  
Twisting

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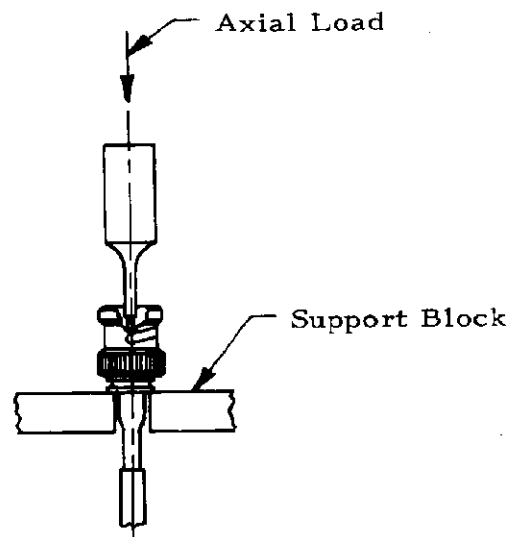


Figure 5  
Terminal Retention

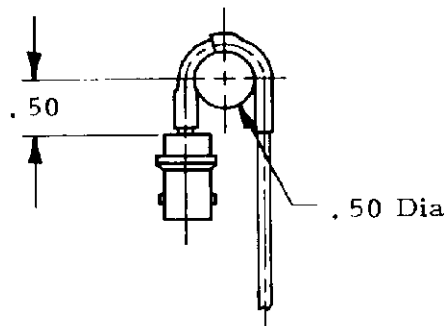


Figure 6  
Bending

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