

Specification for HexaShield Adapters for Circular Connectors

1.0 Introduction

1.1 Scope

This specification covers accessories for use with electrical connectors under non-environmental conditions, and for suppression of radio frequency and electromagnetic interference. Unless otherwise specified, it refers to the SAE-AS85049 for category 3C.

1.2 Description

The HexaShield™ adapters covered by this specification are used to terminate individual shields of a cable bundle. As an option, an overbraid can be terminated as well to the same adapter.

1.3 These adapters are designed to be mounted on circular Military Specification connectors.

1.4 Temperature range: -65°C to +175°C (with silver-plated copper braid).
-65°C to +150°C (with tin-plated copper braid).

2.0 Requirements

2.1 Materials

2.1.1 Adapter shell: Aluminum Alloy

2.1.2 Ferrule: Copper Alloy

2.1.3 Solder Shield: Copper Braid tinned with Sn96 per ANSI J-STD-006.

2.1.4 Plating: Electroless Nickel conforming to SAE AMS-C-26074,
or Cadmium Olive Drab per SAE AMS-QQ-P-416
over a suitable underplate.

2.2 Performance Requirements

2.2.1 Visual Examination

HexaShield™ adapter shall be examined visually to ensure conformance with Specification Control Drawing.

2.2.2 Temperature Cycling

Test in accordance with MIL-STD-1344, method 1003. 5 cycles with -65°C to +175°C (Silver plated copper braid) or to +150°C (Tin plated copper braid). After conditioning, HexaShield™ adapters shall meet the subsequent performance requirements specified in Table 1 and shall show no evidence of damage detrimental to performance or handling.

2.2.3 Temperature Life

HexaShield™ adapters shall be subjected to the following temperature for 1000 hours:

- +175°C for silver plated copper braid.
- +150°C for tin plated braid.

After conditioning, HexaShield™ adapters shall meet the subsequent performance requirements specified in Table 1, and shall show no evidence of damage detrimental to performance or handling.

2.2.4 Maintenance Aging

Each sample is dismantled and assembled 10 times. The various components of each adapter can be mixed together during the disassembly. After the test there shall be no evidence of cracks, breaks or loosening of parts.

2.2.5 Vibration

Test in accordance with MIL-STD-1344, method 2005-1, test condition VI, letter J, 8 hours in each of 3 mutually perpendicular directions. The sample shall be tightened on a suitable fixture using the recommended coupling torque. The cable shall be supported 250 mm from the test fixture (see fig.1). Monitoring for discontinuity is not required. After the test, there shall be no evidence of cracks, breaks or loosening of parts.

2.2.6 Mechanical Shock

Test in accordance with MIL-STD-1344, method 2004-1, test condition D. Three shocks in each 6 perpendicular directions. The sample shall be tightened on a suitable fixture using the recommended coupling torque. The cable shall be supported 250 mm from the test fixture (see fig.1). Monitoring for discontinuity is not required. After the test, there shall be no evidence of cracks, breaks or loosening of parts.

2.2.7 Cable Pull-Out

Individual ferrules are tested with 4 shielded twisted pairs in accordance with MIL-STD-1344, method 2009-1, test condition A (3 ferrules min. per HexaShield). Each ferrule shall not pull-out. During the test, the DC resistance test (paragraph 2.2.9) shall be monitored. DC resistance shall not exceed 7 mohms during the test and 5 mohms after.

2.2.8 Salt Spray-Corrosion

Test in accordance with MIL-STD-1344, method 1001-1, test condition letter B for nickel plated shell (48 hours without molded part), and test condition C for cadmium plated shell (96 hours without molded part and 500 hours with molded part). After the test, HexaShield™ adapters shall show no exposure of basis metal due to corrosion, which could affect the subsequent performance requirements specified in Table 1.

2.2.9 DC Resistance

HexaShield™ adapters shall be tested in accordance with MIL-STD-1344 A, method 3004-1 or equivalent test equipment. Test current 1.0 ± 0.1 ampere.

Voltmeter probes or four wire connections shall be applied as follows: (see fig. 1).

- Probes between A and B
- Sample DC resistance = $R1 - R2$

Where $R2$ shall be the DC resistance of an equivalent length of cable. The DC resistance shall not exceed 5.0 mohms before or after conditioning.

2.2.10 Post Test Examination

The tested HexaShield™ adapters shall be examined for evidence of cracking, loosening of parts, or missing parts.

2.2.11 Shielding Effectiveness

HexaShield™ adapter, assembled on to a brass adapter shall be tested in accordance with method VG95373 Part. 41 and the fig. 2 hereafter. The sample shall be wired with copper tubes. The minimum shielding effectiveness shall be better than 98dB at 30 Mhz and 90dB at 100 Mhz. Sample description (see fig. 2).

3.0 Quality Assurance Provisions

3.1. Qualification Inspection

It shall consist of all of the applicable examinations and tests performed in the sequence specified in Table 1.

3.2 Qualification By Similarity

For parts which differ in minor details from those submitted for qualification, the manufacturer needs only provide inspection and test data to validate the differences.

3.3 Sampling

Samples have been selected in order to be a representative sampling of the HexaShield™ family for circular connectors. The most unfavorable configurations in term of weight and size shall be subjected to the qualification.

Sample type

- HexaShield™ adapters with:
Cadmium and nickel plating.
Straight and right angle bodies
SolderShield ferrules
- Cable
Four shielded twisted pairs shall be connected to each SolderShield ferrule.
Shielded twisted pairs shall be as those recommended in the Specification Control Drawing.

Table 1

<i>Tests</i>	Group 1	<i>Requirements</i>
Visual Examination		2.2.1
DC Resistance		2.2.9
Vibration		2.2.5
Mechanical Shock		2.2.6
DC Resistance		2.2.9
Salt Spray		2.2.8
DC Resistance		2.2.9
Post Test Examination		2.2.10
	Group 2	
Visual Examination		2.2.1
DC Resistance		2.2.9
Maintenance Aging		2.2.4
DC Resistance		2.2.9
Temperature Cycling		2.2.2
DC Resistance		2.2.9
Temperature Life		2.2.3
DC Resistance		2.2.9
Cable Pull out		2.2.7
Post test Examination		2.2.10
	Group 3	
Visual Examination		2.2.1
DC Resistance		2.2.9
Shielding Effectiveness		2.2.11

Figure 1

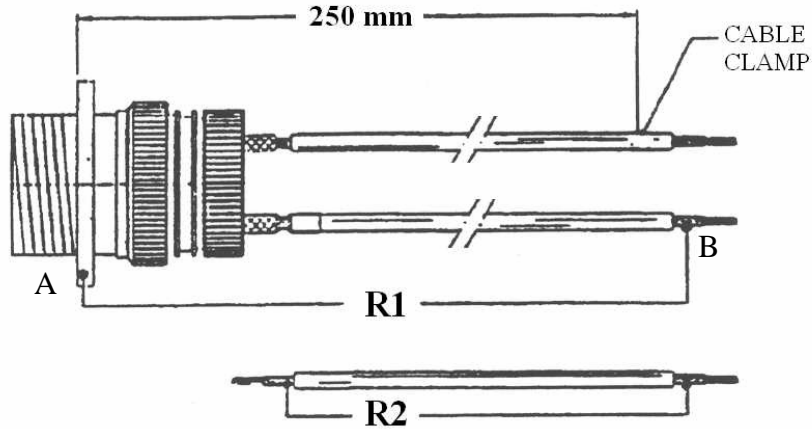
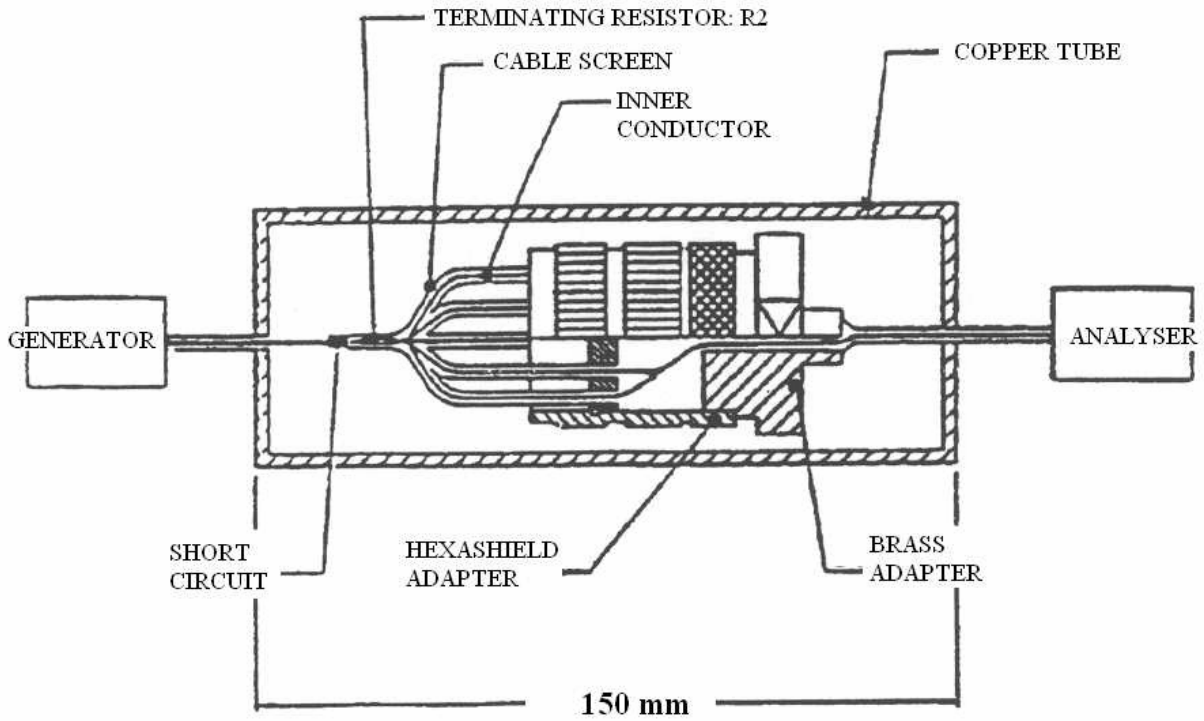


Figure 2



HexaShield is a Trademark of Tyco Electronics.