technical report

QUALIFICATION TEST OF
ULTRA FAST ".250" Series
AWG #22 & AWG #18
Fully Insulated FASTON
Receptacle Terminal
S-224

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Environmental Testing Department

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ENVIRONMENTAL TESTING DEPARTMENT

February 2, 1979

Qualification Test of ULTRA FAST*
".250" Series, AWG 22-18 Fully
Insulated FASTON* Receptacle
Terminal - AMP Spec. 108-1043

INTRODUCTION:

ULTRA Fast fully insulated FASTON receptacle terminals were tested in the Environmental Laboratory to determine if they comply with the performance requirements of AMP Product Spec. 108-1043.

SCOPE:

ULTRA FAST fully insulated FASTON receptacle terminals crimped to wire in accordance with the procedures of the ULTRA FAST applicator were subjected to the qualification test sequence listed in paragraph 3.5 of the specification.

CONCLUSION:

ULTRA FAST fully insulated FASTON receptacle terminals, when manufactured in accordance with AMP Drawing 520113 meet those performance requirements of AMP Product Specification 108-1043.

PRODUCT DESCRIPTION:

ULTRA FAST fully insulated FASTON receptacle terminals consist of a FASTON body enclosed in a fully insulated housing. They mate with FASTON tabs which are used on business and commercial equipment.

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WIRE CHARACTERISTICS:

Stranded, tin plated wire, with 600 volt black insulation, conforming to UL 1015 and as described in AMP Specification 116-1142 was used for testing.

TEST SAMPLE:

Quantity	Part No.	Description
225	2-520113-2	Receptacle
20	60447	.250 X .032 Tab
20	61691-1	.250 X .032 Tab

QUALIFICATION TEST SEQUENCE:

The test sequence of paragraph 3.4 contained in AMP Specification 108-1043 was followed as shown below:

Examination or Test Nomenclature	Requirement & Method Paragraph
Test Group I	
Examination of Product	3.4
Test Group II	
Secureness	3.4
Heating	3.4
Pull Out	3.4
Test Group III	
Engagement & Disengagement	3.4
Test Group IV	
Dielectric Withstand, Test Condition A	3.4
Test Group V	
Dielectric Withstand, Test Condition C	3.4
Test Group VI	
Dielectric Withstand, Receptacle, Tab Entry Portion	3.4
Test Group VII	
Heat Age 136°C	3.4
Dielectric Withstand, Test Condition A	3.4
Test Group VIII	
Heat Age 100°C	3.4
Humidity	3.4
Dielectric Withstand, Test Condition A	3.4

SUMMARY OF TEST RESULTS:

Test Group I - (5 samples tested)

Examination of product - 3.4

All receptacles selected for test were found to comply with the material, construction, functional dimensions, and workmanship requirements of the specification.

Test Group II - (40 samples tested)

Secureness - 3.4

Twenty receptacles each, crimped to AWG #22 & AWG #18 wire, were subjected to one hour of mechanical flexing under load in accordance with the specification. Loads used were 1.0 pound for AWG #22 wire, and 2.0 pounds for AWG #18 wire.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. The joint between the receptacle and the wire remained intact.

Heating - 3.4

Twenty receptacles each, crimped to AWG #22 and AWG #18 wire, were subjected to a heating (temperature rise) test in accordance with the specification. Samples were stabilized at the specified current and temperature rise was measured and recorded. Specification maximum temperature rise is 20°C.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. Maximum individual temperature rise values are as recorded below:

Wire	Current, amps	Maximum individual temperature rise
AWG #22	3.0	4.1°C
AWG #18	7.0	17.3°C

Pull Out - 3.4

Twenty receptacles each, crimped to AWG #22 and AWG #18 wire, were subjected to a one minute direct pull in accordance with the specification. Specified load values are 10 pounds for AWG #22 and 20 pounds for AWG #18 wire.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. The joint between the receptacle and the wire remained intact after one minute, at the specified load.

Test Group III - (20 samples tested)

Engagement/Disengagement - 3.4

Receptacles and tabs were engaged and disengaged six times in accordance with the specification. Specification requirements are as tabulated below:

1st engagement,	individual maximum	17 lbs.
1st disengagement,	individual maximum	17 lbs.
	average minimum	5 lbs.
	individual minimum	3 lbs.
6th disengagement,	average minimum	4 lbs.
	individual minimum	3 lbs.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. Applicable values are as tabulated below:

	AWG #22-18
1st engagement, individual maximum	8.6 lbs.
1st disengagement, individual maximum	7.6 lbs.
average minimum	6.4 lbs.
individual minimum	5.2 lbs.
6th disengagement, average minimum	5.4 lbs.
individual minimum	4.0 lbs.

Test Group IV - (40 samples tested)

Dielectric Withstand, Test Condition A - 3.4

Twenty receptacles each, crimped to AWG #22 and AWG #18 wire, were subjected to dielectric withstand, test condition A, for a duration of one minute in accordance with the specification. A 3400 V AC potential was applied between the wire and a container of #12 lead shot in which the receptacle was embedded.

Summary of results

All receptacles were found to comply with the requirements of the specification. There was no breakdown or flashover noted.

Test Group V - (20 samples tested)

Dielectric Withstand, Test Condition C - 3.4

Twenty uncrimped receptacles were subjected to dielectric withstand, test condition C, for a duration of one minute in accordance with the specification. A 3000 V AC potential was applied between the wire entry portion of the receptacle and a flat metal plate.

Summary of results

All receptacles were found to comply with the requirements of the specification. There was no breakdown or flashover noted.

Test Group VI - (20 samples tested)

Dielectric Withstand, Receptacle, Tab Entry Portion - 3.4

Twenty receptacles were subjected to dielectric withstand for a duration of one minute in accordance with the specification. A 1000 V AC potential was applied between the receptacle and a flat metal plate, as shown in figure 5 of the specification.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. There was no breakdown or flashover noted.

Test Group VII - (40 samples tested - 20 samples per wire size)

Heat Age - 3.4

Twenty receptacles each, crimped to AWG #22 and AWG #18 wire were subjected to an elevated temperature of 136°C for seven days.

Test Group VII (cont'd)

Dielectric Withstand, Test Condition A - 3.4

After Heat Age, forty receptacles were subjected to dielectric withstand, test condition A for a duration of one minute, in accordance with the specification. A 3400 V AC potential was applied between the wire and a container of #12 lead shot in which the receptacle was embedded.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. There was no breakdown or flashover noted.

Test Group VIII - (40 samples tested - 20 samples per wire size)

Heat Age - 3.4

Forty uncrimped receptacles were subjected to an elevated temperature of 100°C for seven days.

Humidity - 3.4

Forty uncrimped receptacles were subjected to a humidity test for 24 hours. The R.H. was 85% and the temperature was 30°C. After humidity samples were crimped to the appropriate wire.

Dielectric Withstand, Test Condition A - 3.4

After Heat Age and Humidity, forty receptacles were subjected to dielectric withstand, test condition A, for a duration of one minute, in accordance with the specification. A 3400 V AC potential was applied between the wire and a container of #12 lead shot in which the receptacle was embedded.

Summary of results

All receptacles tested were found to comply with the requirements of the specification. There was no breakdown or flashover noted.

VALIDATION:

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