
AMP Test Specifications vs EIA and IEC Test Methods

1. SCOPE

This specification is intended to provide engineers with test conditions contained within the most commonly used EIA and IEC test methods for electrical connectors. It also lists the AMP 109 Test method which has either been superseded by the EIA and IEC document, or is used when no EIA or IEC equivalent test exists. This document can be used to assist in determining the appropriate test conditions and lists the details which need to be specified on a test request. This specification is not intended to provide adequate detail for the person running the test. Anyone who is actually conducting a test must be familiar with the appropriate EIA or IEC document.

2. EIA and IEC DOCUMENT NUMBERING**2.1. EIA Methods**

Test methods are numbered within the EIA 364 series of documents. Revision levels of EIA documents are indicated by a letter. If there is no letter following the number (e.g., 364-106), this indicates the initial release of the document. If a letter follows the number (e.g., 364-28C), this indicates that the document is at revision level C; i.e., three revision levels beyond the original release.

2.2. IEC Methods

Two numbering formats are used, the original format and the rationalized format. In the mid-to-late 1990's, the IEC revised all document numbering to a rationalized format and the documents are officially identified in this format, although they may not yet have been reissued under the rationalized number. In the rationalized format, the original document numbered as IEC 512-4, Test 6d, becomes IEC 60512-6-4. At the present time, both numbers are used to identify the same document. If, at some time in the future, IEC 512-4, Test 6d, undergoes a significant revision, it will be reissued totally as IEC 60512-6-4 and the original number will be obsolete.

In this document, the existence of both numbers (original and rationalized) for a specific IEC method indicates that the document has not yet undergone a significant revision that would warrant reissuing it totally under the rationalized number and obsoleting the original number.

Revision levels of IEC documents are indicated by date, which may be in the form of a year and month (e.g., 1994-09) or only a year (e.g. 1997). The absence of a revision date after a document number in the rationalized format of this document is also an indication that the document has not yet been reissued under the rationalized number.

3. TEST CONDITIONS FOR COMMON EIA AND IEC TEST METHODS

The following table lists the most common conditions used when testing to the EIA 364 and IEC 60512 standards. It also gives a cross reference to the former AMP 109 Test Specification number. Within a specific test, the EIA or IEC may contain additional condition options that are not contained within this document. If you are required to perform to conditions not specified in this document, please refer to the appropriate EIA 364 or IEC 60512 document available from Engineering Practices and Standards (EPS). Also, there are a few AMP 109 Test Specifications which have no EIA or IEC equivalent, or the equivalent EIA or IEC has not yet been released. In these cases you can obtain a copy of the 109 document from StarTEC to check test conditions.

Test Description	Test Number	Test Conditions	Former AMP 109 Number
ELECTRICAL TESTS (except high speed)			
Contact Resistance	EIA 364-6B	DC or AC current as specified in the referencing document.	109-25
	IEC 60512-2-2 (512-2: 1985 Test 2b, 512-2 Amendment 1: 1994)	DC or AC current as specified in the referencing document.	109-25
Current Carrying Capacity	IEC 60512-5-1	Stabilize at a single current level for 1 hour after 3 consecutive readings at 5 minute intervals are within 1°C.	109-45-3
Dry Circuit Resistance	EIA 364-23A	100 milliamperes maximum, 20 millivolts maximum.	109-6-6
	IEC 60512-2-1	100 milliamperes maximum, 20 millivolts maximum.	109-6-6
Insulation Resistance	EIA 364-21C	At 500 volts DC or as specified, and hold for 2 minutes or as specified.	109-28
	IEC 60512-3-1	At 10, 100, or 500 volts DC and hold for 1 minute.	109-28
Temperature Rise vs Current	EIA 364-70A Method 1	Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C.	109-45-1
	EIA 364-70A Method 2	Increment through a minimum of 4 current levels, stabilizing each until 3 readings at 5 minute intervals are within 1°C.	109-45-2
Voltage Proof	IEC 60512-4-1 (512-2: 1985 Test 4a, 512-2 Amendment 1: 1994)	Ramp at 500 volts per second maximum and hold for 1 minute at the voltage specified in the referencing document.	109-29
Withstanding Voltage	EIA 364-20B Condition I	At sea level, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
	EIA 364-20B Condition II	At 30,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	None
	EIA 364-20B Condition III	At 50,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
	EIA 364-20B Condition IV	At 70,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
	EIA 364-20B Condition V	At 100,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
	EIA 364-20B Condition VI	At 656,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	None
	EIA 364-20B Condition VII	At 15,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
	EIA 364-20B Condition VIII	At 150,000 feet simulated altitude, ramp at 500 volts per second and hold for 1 minute at the voltage specified in the referencing document.	109-29
ELECTRICAL TESTS, HIGH SPEED			
Attenuation	EIA 364-101	Insertion technique and time domain method. Specify type of drive signal (single ended or differential). Also specify environment impedance if other than 50 ohms for single ended or 100 ohms for differential.	109-174
Capacitance	EIA 364-30A	Specify frequency, standards are 1 kHz and 1 MHz.	109-47
	IEC 60512-22-1 (512-9: 1992 Test 22a)	Specify frequency, preferred are 1 kHz and 1 MHz.	109-47
Connector Return Loss or SWR Using NATDR	None	None	Use 109-181

Test Description	Test Number	Test Conditions	Former AMP 109 Number
Contact Disturbance	IEC 60512-2-5 (512-2: 1985 Test 2e, 512-2 Amendment 1: 1994)	Contacts can be series wired with circuit not to exceed 3 ohms. Discontinuity is defined a voltage exceeding 50% of source voltage for 1 microsecond or a time specified in the referencing document.	109-31
Crosstalk	EIA 364-90 Method A	Digital cable assembly, time domain.	109-163
	EIA 364-90 Method B	Analog, frequency domain, specify spectrum or network analyzer.	109-179
Eye Pattern and Jitter Testing for Electrical Connectors	EIA 364-107	For Eye Pattern specify Method A (mask test) or Method B (eye opening test) For Jitter, specify Method C (Pseudo-Random Bit Sequence test (PRBS)) or Method D (pulse test (single pattern)). Must specify signal rise time, amplitude, and clock frequency, data pattern, single-ended or differential, and termination value with tolerances.	NA
Microsecond Discontinuity	EIA 364-46A	Contacts can be series wired with circuit not to exceed 3 ohms. Discontinuity is defined as a resistance of 10 ohms or greater for 1 microsecond or longer.	109-31
Nanosecond Event Detection	EIA 364-87 Method I	Uses AnaTech 64EHD, 32EHD or equivalent (recommended method). Must specify duration at Test Condition: A, 1 ns; D, 10 ns; F, 50 ns (recommended). Also in EIA 364-87 but not recommended are Test Condition B, 2 ns; C, 5 ns; and E, 20 ns; and Test Method 2 which uses separate power supply, detector, pulse generator, and scope.	109-188
Near End Crosstalk (NEXT), Terminated Open Circuit (TOC)	TIA/EIA 568B	Specify Category 3, 4, or 5. Category 5 is the most common, since Categories 3 and 4 are less severe, meeting Category 5 also meets Categories 3 and 4.	109-194
Propagation Delay, Cable Assemblies	EIA 364-103	Specify environment impedance if other than 50 ohms for single-ended and 100 ohms for differential.	109-168
RF Leakage	None	None	Use 109-182
Rise Time Degradation	EIA 364-102	Specify Method A (single-ended), Method B (differentially driven) or both. Specify environment impedance if other than 50 ohms for single-ended and 100 ohms for differential.	109-138
Shielding Effectiveness	No EIA Method	None	Use 109-90
	IEC 60512-23-3	Specify minimum value of shielding effectiveness in dB or maximum transfer impedance and frequency or frequency range.	None
Transfer Impedance of Connectors	EIA 364-80 Method B	Specify frequency range if other than 30 to 500 MHz. Specify marker frequencies and if phase plots are desired.	109-175
Impedance and VSWR of Coaxial Connectors and Lead Assemblies	EIA 364-108	Specify parameters to be measured such as impedance, reflection coefficient, VSWR and/or return loss. Specify system rise time, single ended or differential measurements, signal/ground pattern, and specimen environment impedance if other than 50 ohms single ended and 100 ohms differential.	109-9 109-174
MECHANICAL TESTS			
Cable Pull-Out	IEC 60512-17-3 (512-9:1992 Test 17c)	Apply force at a rate of 20 N per second to the specified value and hold for 1 minute.	109-46-2 (Used in Mfg)
	EIA 364-38B Condition A	Apply force at a rate of 89 N per minute to 222 N and hold for 1 hour.	109-46-1 (Used in Mfg)
	EIA 364-38B Condition B	Apply force at a rate of 89 N per minute to 333 N and hold for 1 hour.	109-46-1 (Used in Mfg)
	EIA 364-38B Condition C	Apply force at a rate of 89 N per minute to 445 N and hold for 1 hour.	109-46-1 (Used in Mfg)
	EIA 364-38B Condition D	Apply force at a rate of 89 N per minute to 556 N and hold for 1 hour.	109-46-1 (Used in Mfg)
	EIA 364-38B Condition E	Apply force at a rate of 89 N per minute to 111 N and hold for 1 hour.	109-46-1 (Used in Mfg)

Test Description	Test Number	Test Conditions	Former AMP 109 Number	
Contact Retention	EIA-364-29B	Apply specified load at a rate of 4.4 N per second and hold for 6 seconds.	109-30-1 (Used in Mfg)	
	IEC 60512-15-1 (512-8:1993 Test 15a)	Apply specified load at a rate of 10 N per second and hold for 10 seconds.	109-30-2 (Used in Mfg)	
Durability for Electrical Connectors	EIA 364-9C	Cycle at 500 cycles per hour for automatic, 300 cycles per hour for manual, and 250 to 300 cycles per hour for automatic circular connectors.	109-27	
Engaging and Separating Force	IEC 60512-13-1 (IEC 512-13-1: 1996)	Rate of engaging and separating shall be specified in the referencing document.	109-42	
Housing Locking Mechanism Strength	EIA-364-98	Apply force to failure. Specify rate if other than 0.5 inch per minute.	109-50	
Insert Retention In Housing	IEC 512-8, Test 15B	Force is applied at 50N/s or 5kPa/s and held at specified value for 1 minute.	NA	
Mating and Unmating Force	EIA 364-13B	Rate of mating and unmating shall be specified in the referencing document.	109-42	
Mechanical Operation	IEC 60512-9-1 (512-5: 1992 Test 9a)	Cycle rate and mounting method shall be specified in the referencing document.	109-27	
Mechanical Shock	EIA 364-27B Method A	Three shocks x 3 axis x 2 directions = 18 shocks, 490 m/s ² (50 g's), 11 ms, half-sine, 3.44 m/s velocity change.	109-26-1	
	EIA 364-27B Method B	Three shocks x 3 axis x 2 directions = 18 shocks, 735 m/s ² (75 g's), 6 ms, half-sine, 2.81 m/s velocity change.	109-26-2	
	EIA 364-27B Method C	Three shocks x 3 axis x 2 directions = 18 shocks, 980 m/s ² (100 g's), 6 ms, half-sine, 3.75 m/s velocity change.	109-26-3	
	EIA 364-27B Method D	Three shocks x 3 axis x 2 directions = 18 shocks, 2941 m/s ² (300 g's), 3 ms, half-sine, 5.61 m/s velocity change.	109-26-12	
	EIA 364-27B Method E	Three shocks x 3 axis x 2 directions = 18 shocks, 490 m/s ² (50 g's), 11 ms, sawtooth, 2.68 m/s velocity change.	109-26-7	
	EIA 364-27B Method F	Three shocks x 3 axis x 2 directions = 18 shocks, 735 m/s ² (75 g's), 6 ms, sawtooth, 2.20 m/s velocity change.	109-26-8	
	EIA 364-27B Method G	Three shocks x 3 axis x 2 directions = 18 shocks, 980 m/s ² (100 g's), 6 ms, sawtooth, 2.96 m/s velocity change.	109-26-9	
	EIA 364-27B Method H	Three shocks x 3 axis x 2 directions = 18 shocks, 294 m/s ² (30 g's), 11 ms, half-sine, 2.07 m/s velocity change.	109-26-10	
	EIA 364-27B Method I	Three shocks x 3 axis x 2 directions = 18 shocks, 294 m/s ² (30 g's), 11 ms, sawtooth, 1.62 m/s velocity change.	109-26-11	
	EIA 364-27B Method J	Three shocks x 3 axis x 2 directions = 18 shocks, 4903 m/s ² (500 g's), 11 ms, half-sine, 3.11 m/s velocity change.	109-26-4	
	EIA 364-27B Method K	Three shocks x 3 axis x 2 directions = 18 shocks, 9806 m/s ² (1000 g's), 0.5 ms, half-sine, 3.11 m/s velocity change.	109-26-5	
	EIA 364-27B Method L	Three shocks x 3 axis x 2 directions = 18 shocks, 14709 m/s ² (1500 g's), 0.5 ms, half-sine, 4.69 m/s velocity change.	109-26-6	
	NOTE: A large range of conditions can be selected by choosing values in the tables. The following are recommended conditions. Conditions shall be specified in the referencing document.			
	IEC 60512-6-3		Three shocks x 3 axis x 2 directions = 18 shocks, 294 m/s ² (30 g's), 11 ms, half-sine, 2.07 m/s velocity change.	109-26-13
			Three shocks x 3 axis x 2 directions = 18 shocks, 294 m/s ² (30 g's), 11 ms, sawtooth, 1.62 m/s velocity change.	109-26-14
		Three shocks x 3 axis x 2 directions = 18 shocks, 490 m/s ² (50 g's), 11 ms, half-sine, 3.44 m/s velocity change.	109-26-15	
		Three shocks x 3 axis x 2 directions = 18 shocks, 490 m/s ² (50 g's), 11 ms, sawtooth, 2.68 m/s velocity change.	109-26-16	
		Three shocks x 3 axis x 2 directions = 18 shocks, 980 m/s ² (100 g's), 6 ms, half-sine, 3.75 m/s velocity change.	109-26-17	
		Three shocks x 3 axis x 2 directions = 18 shocks, 980 m/s ² (100 g's), 6 ms, sawtooth, 2.96 m/s velocity change.	109-26-18	

Test Description	Test Number	Test Conditions	Former AMP 109 Number	
Normal Force Test Procedure	EIA 364-04	Spring Rate Technique - Requires deflection distance to be specified where at which normal force is recorded. This can be done in housing or on contacts out of the housing.	109-98-2 109-98-3	
	EIA 364-04A	Normal Force Gage Technique. Specify gage size.	109-98-1	
Terminal Strength	EIA-364-62	Specify bending, or torque and bending. Specify number of bends if other than 2.	109-64	
Termination Tensile Strength	EIA 364-8B	25 ± 6 mm per minute cross head speed.	109-16-1	
	IEC 60512-16-4 (512-8: 1993 Test 16d)	25 to 50 mm per minute cross head speed.	109-16-2	
	IEC 60512-16-20 (512-16-20: 1996 Method A)			
Torque Mechanism Strength	None	None	Use 109-183	
Vibration	EIA 364-28D Test Condition I	10-55 Hz sinusoidal, 0.06 inch peak-to-peak, 120 cycles (2 hours) on each axis.	109-21-1	
	EIA 364-28D Test Condition II	10-500 Hz sinusoidal, 0.06 inch peak-to-peak or 10 g peak, 12 cycles (3 hours) on each axis.	109-21-2	
	EIA 364-28D Test Condition III	10-2000 Hz sinusoidal, 0.06 inch peak-to-peak or 15 g peak, 12 cycles (4 hours) on each axis.	109-21-3	
	EIA 364-28D Test Condition IV	10-2000 Hz sinusoidal, 0.06 inch peak-to-peak or 20 g peak, 12 cycles (4 hours) on each axis.	109-21-4	
	EIA 364-28D Test Condition V	50-2000 Hz random levels, select condition letter for rms g where: A, 5.35; B, 7.56; C, 9.26; D, 11.95; E, 16.91; F, 20.71; G, 23.91; H, 29.28; I, 37.8; and K, 46.30. Duration shall be specified as 3 minutes, 15 minutes, 1.5 hours or 8 hours in each direction.	109-21-5	
	EIA 364-28D Test Condition VI	50-2000 Hz random levels, select condition letter for rms g where: A, 6.21; B, 8.78; C, 10.76; D, 13.89; E, 19.64; F, 24.06; G, 27.78; H, 34.02; I, 43.92; and K, 53.79. Duration shall be specified as 3 minutes, 15 minutes, 1.5 hours or 8 hours in each direction.	109-21-6	
	EIA 364-28D Test Condition VII	20-500 Hz random levels, select condition letter for rms g where: A, .98; B, 1.55; C, 2.19; D, 3.10; E, 4.90; F, 6.93; and G, 9.80. Duration shall be specified as 3 minutes, 15 minutes, 1.5 hours or 8 hours in each direction.	109-21-8	
	NOTE: A large range of conditions can be selected by choosing values in the tables. The following are recommended conditions. Conditions shall be specified in the referencing document.			
	IEC 60512-6-4	10-55 Hz sinusoidal, 0.06 inch peak-to-peak, 10 cycles (approximately 45 minutes) on each axis.	109-21-9	
		10-500 Hz sinusoidal, 0.06 inch peak-to-peak or 10 g peak, 10 cycles (approximately 2 hours) on each axis.	109-21-10	
10-2000 Hz sinusoidal, 0.12 inch peak-to-peak or 20 g peak, 10 cycles (approximately 2.5 hours) on each axis.		109-21-11		
5-500 Hz random, specify acceleration spectral density at 0.05, 0.1, 0.5, or 1.0 (m/s ²)/Hz. Duration shall be specified as 1, 3, 10, 30, 100, or 300 minutes. Specify Method 1 (without initial response investigation), or Method 2 (with initial response investigation). Method 1 is recommended.		109-21-12		
20-2000 Hz random, specify acceleration spectral density at 0.05, 0.1, 0.5, 1.0, 5.0, or 10.0 (m/s ²)/Hz. Duration shall be specified as 1, 3, 10, 30, 100, or 300 minutes. Specify Method 1 (without initial response investigation), or Method 2 (with initial response investigation). Method 1 is recommended.		109-21-13		

Test Description	Test Number	Test Conditions	Former AMP 109 Number
ENVIRONMENTAL TESTS			
Damp Heat	IEC-60512-11-3	40°C, 90 to 95% RH, 96 hours.	109-23-2
Damp Heat, Cyclic	IEC-60512-11-12	25 to 40°C or 55°C, 90 to 100% RH, 10 cycles (10 days).	109-23-6
Dry Heat	IEC 60512-11-9	Temperature, duration, and whether the connectors are energized or not shall be specified in the referencing document.	109-43
Fluid Immersion	EIA 364-10A Condition A	Hydraulic fluid per MIL-H-5606, 5 minutes at 85°C, 7 cycles.	109-33 Condition A
	EIA 364-10A Condition B	Turbine fluid, grade JP-5 per MIL-T-5624, 5 minutes at 25°C, 7 cycles.	109-33 Condition B
	EIA 364-10A Condition C	Lubricating oil per MIL-L-7808, 5 minutes at 120°C, 7 cycles.	109-33 Condition C
	EIA 364-10A Condition D	Lubricating oil per MIL-PRF-23699, 5 minutes at 120°C, 7 cycles.	109-33 Condition D
	EIA 364-10A Condition E	Defrosting fluid per MIL-A-8243, 5 minutes at 65°C, 7 cycles.	109-33 Condition E
	EIA 364-10A Condition F	Cleaning compound diluted for cleaning per MIL-PRF-87937 Type I alkaline base, 5 minutes at 65°C, 7 cycles.	109-33 Condition F
	EIA 364-10A Condition G	Gasohol per ASTM-D-4814, 5 minutes at 65°C, 5 cycles.	109-33 Condition G
	EIA 364-10A Condition I	One part isopropyl alcohol, per TT-I-735 grade A or B; and 3 parts mineral spirits, per A-A-2904 type II grade A or P-D-680 type I by volume, 5 minutes at 25°C, 5 cycles.	109-33 Condition I
	EIA 364-10A Condition K	Coolant, dielectric fluid, synthetic silicate ester base MIL-PRF-47220 (Coolant 25) or equivalent, 1 minute at room temperature, 1 cycle.	109-33 Condition K
	EIA 364-10A Condition L	Hydraulic fluid M2-V Chevron oil ST0145LB0001 or equivalent, 85 minutes at room temperature, 1 cycle.	None
	EIA 364-10A Condition Z	As specified in the referencing document.	109-33 Condition Z
	IEC 60512-19-3: 1997	Fuels at 40°C, 15 to 20 minutes, 5 cycles. Hydraulic fluids at 85°C, 15 to 20 minutes, 5 cycles. Liquid lubricants at 120°C for minerals or 150°C for synthetics, 15 to 20 minutes, 5 cycles. Cleaning products at 25°C, 15 to 20 minutes, 5 cycles. De-icing liquids at 50°C, 15 to 20 minutes, 5 cycles. Extinguishing liquids at -15°C, 15 to 20 minutes, 5 cycles. Cooling liquids at 50°C, 15 to 20 minutes, 5 cycles. Greases at 70°C, 15 to 20 minutes, 5 cycles.	109-33-2
	Humidity	EIA 364-31B Method II	40°C, 90 to 95% RH. Test Condition A (96 hours) will be performed unless otherwise specified. Other options include Condition B, 240 hours; Condition C, 504 hours; Condition D, 1,344 hours; or Condition E, 1,000 hours.
EIA 364-31B Method III		25 to 65°C, 80 to 100% RH, 10 cycles (10 days). Specify cold shock (step 7a) and/or vibration (step 7b) if desired.	109-23-3
EIA 364-31B Method IV		25 to 65°C, 80 to 100% RH, 10 cycles (10 days). Specify cold shock at -10°C (step 7a) if desired.	109-23-4
EIA 364-31B Method V		25 to 71°C, 80 to 100% RH, 10 cycles (10 days). Specify cold shock at -10°C (step 7a) if desired.	NA

Test Description	Test Number	Test Conditions	Former AMP 109 Number
Mixed Flowing Gas	EIA 364-65A Class II	70% RH, 30°C, 10 ppb Cl ₂ , 200 ppb NO ₂ , 10 ppb H ₂ S, for 20 days unless otherwise specified. NOT RECOMMENDED, use Class IIA INSTEAD.	109-85-2
	EIA 364-65A Class IIA	70% RH, 30°C, 10 ppb Cl ₂ , 200 ppb NO ₂ , 10 ppb H ₂ S, 100 ppb SO ₂ , for 20 days unless otherwise specified.	109-85-2A
	EIA 364-65A Class III	70% RH, 30°C, 20 ppb Cl ₂ , 200 ppb NO ₂ , 100 ppb H ₂ S, for 20 days unless otherwise specified. NOT RECOMMENDED, use Class IIIA INSTEAD.	109-85-3
	EIA 364-65A Class IIIA	70% RH, 30°C, 20 ppb Cl ₂ , 200 ppb NO ₂ , 100 ppb H ₂ S, 200 ppb SO ₂ , for 20 days unless otherwise specified.	109-85-3A
	EIA 364-65A Class IV	75% RH, 40°C, 30 ppb Cl ₂ , 200 ppb NO ₂ , 200 ppb H ₂ S, for 20 days unless otherwise specified.	109-85-4
	IEC 60512-11-7: 1996 Method 1	75% RH, 25°C, 100 ppb H ₂ S, 500 ppb SO ₂ duration shall be specified in the referencing document.	None
	IEC 60512-11-7: 1996 Method 2	70% RH, 30°C, 10 ppb Cl ₂ , 200 ppb NO ₂ , 10 ppb H ₂ S, duration shall be specified in the referencing document.	None
	IEC 60512-11-7: 1996 Method 3	75% RH, 30°C, 20 ppb Cl ₂ , 200 ppb NO ₂ , 100 ppb H ₂ S, duration shall be specified in the referencing document.	None
	IEC 60512-11-7: 1996 Method 4	75% RH, 25°C, 10 ppb Cl ₂ , 200 ppb NO ₂ , 10 ppb H ₂ S, 200 ppb SO ₂ duration shall be specified in the referencing document.	None
Rapid Change in Temperature	IEC 60512-11-4	Temperature extremes, duration at each extreme, and number of cycles shall be specified in the referencing document.	109-22
Salt Spray	EIA 364-26B Condition A	5% spray at 35°C for 96 hours.	109-24 Method A
	EIA 364-26B Condition B	5% spray at 35°C for 48 hours.	109-24 Method B
	EIA 364-26B Condition C	5% spray at 35°C for 500 hours.	109-24 Method C
	EIA 364-26B Condition D	5% spray at 35°C for 1000 hours.	109-24 Method D
Salt Mist	IEC 60512-11-6	5% spray at 35°C, specify time.	109-24
Temperature Life	EIA 364-17B	Test is run as Method A (without electrical load); Method B (at rated current); or Method C (at an electrical load which causes the internal temperature of the connector to reach a stated level). The temperature is set at one of the following Test Conditions: 1, 55°C; 2, 70°C; 3, 85°C; 4, 105°C; 5, 125°C; 6, 175°C; 7, 200°C; 8, 350°C; 9, 500°C; 10, 150°C; or 11, 65°C. The duration of exposure is set to one of the following Test Time Conditions: A, 96 hours; B, 250 hours; C, 500 hours; D, 1000 hours; E, 1500 hours; F, 2000 hours; G, 3000 hours; or H, 5000 hours.	109-43
Thermal Shock	EIA 364-32C	Must select a test condition or specify the temperature limits. For each test condition, submersion in liquid nitrogen at -195.8°C can be specified in place of the low temperature extreme. Time at each temperature extreme is determined by the specimen weight as follows: Up to 0.3 lb, 0.5 hour; 0.3 to 3 lb, 1 hour; 3 to 30 lb, 2 hours; or 30 to 300 lb, 4 hours. Test Conditions are: I, -55 to 85°C; II, -65 to 105°C; III, -65 to 125°C; IV, -65 to 150°C; V, -65 to 175°C; VI, -65 to 200°C; VII - 55 to 105°C; or VIII -40 to 105°C. The number of cycles shall be specified in the referencing document.	109-22

Test Description	Test Number	Test Conditions	Former AMP 109 Number
OTHER TESTS			
Determination of Plating Thickness	EIA 364-48 Method A	Metallographic Sectioning - Only good for plating thickness over 100 microinches.	109-52-1 (Used in Mfg)
	EIA 364-48 Method C	X-Ray Fluorescence	109-52-2 (Used in Mfg)
	EIA 364-48	Method B (Beta Backscatter Radiation), Method D (Magnetic Field or Electromagnetic), and Method E (Coulometric) are NOT RECOMMENDED .	NA
Flammability of Electrical Connectors	EIA 364-104A	Condition A, 38 mm flame height for 60 seconds. Condition B, 3 8 mm flame height for 30 seconds. Condition C, 19 mm flame height for 10 seconds.	109-12
Magnetic Permeability	EIA 364-54A	Testing for 2 μ permeability unless otherwise specified.	109-88 (Used in Mfg)
Protection Against Intrusion of Water	IEC 60529: 1989 Amendment 1 1999-11	This document contains a series of tests for degrees of protection provided by enclosures. Tyco Electronics laboratories have conducted testing for Protection Against Intrusion of Water paragraph 14.2.5 (6.3 mm nozzle spray from all practicable directions), paragraph 14.2.6 (12.5 mm nozzle spray from all practicable directions), and paragraph 14.2.7 (water immersion 0.15 to 1.0 m)	109-191
Protection Against Touch and Intrusion of Foreign Particles	IEC 60529: 1989 Amendment 1 1999-11	This document contains a series of tests for degrees of protection provided by enclosures. Tyco Electronics laboratories have conducted testing for Protection Against Intrusion of Foreign Particles of Mated Connectors using paragraph 13.2 which uses spheres which must be specified as 50, 12.5, 2.5, or 1 mm. Also using paragraphs 13.4, 13.5, and 13.6 which use a dust chamber with or without pressure.	109-190
Radial Hole Distortion Measurements	EIA 364-96 (Proposed)	The EIA document has not been released.	Use 109-136
Resistance To Soldering Heat	EIA 364-56A Procedure 1	Solder Cup Method - Unless otherwise specified, the soldering iron will be 360°C and remain until the solder is liquid, 4 to 5 seconds.	109-63-1
	EIA 364-56A Procedure 2	Solder Eyelet Tab or Post Terminations - Unless otherwise specified, the soldering iron will be 360°C and remain until the solder is liquid, 4 to 5 seconds.	109-63-2
	EIA 364-56A Procedure 3	Dip and Wave Solder Terminations - Condition A, 350°C for 3 seconds with immersion rate at 25 mm/sec; Condition B, 260°C for 10 seconds with immersion rate at 25 mm/sec; Condition C, 260°C for 10 seconds; Condition D, 260°C for 20 seconds; Condition E, 280°C for 30 seconds; or Condition F, 260°C for 20 seconds.	109-63-3
	EIA 364-56A Procedure 4	Vapor Phase Reflow - Per fluorocarbon with boiling point of 215°C for 60 to 65 seconds. NOT RECOMMENDED . Not available in Tyco Electronics laboratories.	NA
	EIA 364-56A Procedure 5	Reflow Soldering (Infrared) - Level 1, 215°C; Level 2, 235°C; or Level 3, 250°C. Temperature duration shall be 30 to 35 seconds unless otherwise specified.	109-63-4
Resistance To Soldering Heat Solder Bath Method	IEC 60512-12-4 (512-6, 1984 Test 12d)	Solder bath at 260°C for 10 seconds unless otherwise specified.	109-63-5
Resistance To Soldering Heat Iron Method	IEC 60512-12-5 (512-6, 1984 Test 12e)	Iron shall be 350°C and solder applied for 10 seconds. Specify iron size A (8 mm bit diameter with 1.2 mm diameter solder wire) or size B (3 mm bit diameter with 0.8 mm diameter solder wire).	109-63-6

Test Description	Test Number	Test Conditions	Former AMP 109 Number
Solderability Dip Test	EIA 364-52	Category 3, steam aging (8 hours) will be performed unless otherwise specified. Other options include Category 1, no aging; Category 2, 1 hour steam aging; or Category 4, 16 hours steam aging.	109-11 (Used in Mfg)
	IEC 60512-12-1 (512-6: 1984 Test 12a)	No aging will be performed unless otherwise specified. If aging is desired, it may be selected from the following options: Aging 1a, 1 hour steam aging; Aging 1b, 4 hours steam aging; Aging 2, 10 days damp heat; or Aging 3, 16 hours dry heat.	109-11 (Used in Mfg)
Surface Mount Solderability	EIA 638	Specify vapor phase reflow at 215 to 219°C for 30 to 60 seconds, or Infrared reflow with preheat soak at 150 to 170°C for 60 seconds, and reflow at 215 to 230°C for 60 seconds or storage oven at 215 to 230°C for 2 to 5 minutes (until reflow is ensured). NOTE: Vapor phase is not available in Tyco Electronics laboratories.	109-198
Wear and Mechanical Damage of Contact Finishes	EIA 364-85 Section 7.2.	Dimethylglyoxime (DMG) Vapor Method. Also contained in EIA 364-85 are the DMG spot (Section 7.1) and alkaline polysulfide immersion techniques (Section 7.3.).	109-73