HPC-200 Connectors

1. INTRODUCTION

1.1 Purpose

This document provides the qualification summary of TE Connectivity HPC-200 connector.

1.2 Scope

This specification covers the electrical, mechanical, and environmental performance of HPC-200 connector. Testing was performed at the Shanghai Electrical Components Test Laboratory.

1.3 Conclusion

Based on the test results, all meet the requirements according to TE Connectivity Design Objectives 108-137616.

1.4 Product Description

Part Number	Remarks
H101100030A-000	HPC-200-M-R-OR-01
H1111000301-000	HPC-200-050-F-P-OR-01
H101100130A-000	HPC-200-M-R-BK-01
H1111001301-000	HPC-200-050-F-P-BK-01

1.5 Qualification Test Sequence

Test or Examination	Test Group						
	A1	A2	B	C	D	E	F
	Test Sequence[1)]						
Visual and dimensional examination	1,4	1,3	1,6	1,3	1,8	1,4	1,5
Crimp tensile strength		2					
Mechanical strength impact	2						
Contact resistance			2,4		2,5		
Mechanical operation (Durability)			3				
Insulation resistance					6		
Dielectric strength - Voltage withstanding			5		7		4
Temperature rise				2			
Cold					3		
Dry heat					4		
Degree of protection – IP6X						3	
Degree of protection – IPX7						2	
Simulated long life random vibration at increased levels							2
Shocks							3

Notes:

1) Numbers indicate the sequence in which the tests are performed.

2. TEST PROCEDURE

General			
No.	**Test Items**	**Requirements**	**Condition according to**
2.1	Visual and dimensional examination	Meets requirements of product drawing	Visual and dimensional examination IEC 60512-1-1/-2, Test 1a and 1b 6.2 of EN 61984

Mechanical			
2.2	Crimp Tensile Strength	The force of retention ≥ 3200 N 6.6 of EN 61984	Apply an axial pull-off load to crimped wire of contact secured on the tester, operation Speed: 25.4 mm/min. EN 60512-16-4
2.3	Mechanical strength impact	Connector and internal insulation shall no damage to impair normal use. A reduction of clearance and creepage distance is not allowed. 6.18.1 & 6.18.3 of EN 61984	Dropping height: - 750mm for specimens of mass ≤ 250g Dropping cycles:8 positions in 45° step, one cycles per position IEC 60512-7-2 Test 7b
2.4	Mechanical Operation (Durability)	500 operation cycles without load No damage likely to impair normal use 6.14.1 of EN 61984	Shall be engaged and disengaged by means of A) a device simulating normal operating conditions at the speed of approximately 50mm/min B) manual mating/un-mating 300 Max. cycle per hour IEC 60512-9-1 Test 9a 7.3.9 of EN 61984

Electrical				
2.5	Contact Resistance	Initial	0.5mΩ Max.	Test current: 200A Measure points at the end of the termination IEC 60512-2-2 Test 2b
		Final	The change of contact resistance shall be no more than 50 % of the reference value or ≤5 mΩ. The higher value is permissible	
2.6	Insulation Resistance	Not less than 5000MΩ		Test voltage 500V DC Time:60s IEC 60512-3-1 Test 3a Method B

2.7	Dielectric strength - Voltage withstanding	No flashover or breakdown of voltage 6.13 of EN 61984	Mated specimen Measurement points: Contact/earth Test voltage: RMS withstand voltage 6.8 kV
2.8	Temperature Rise Test	The temperature rise shall not exceed 45°C	Mated specimen, wired to cables of 800-1000mm length 6 Pair of connectors connected together Carry its rated current 200A Test 16 of UL 4128

Environmental			
2.9	Cold	No damage likely to impair function	Subject mated specimen to -40℃ Duration time:2h, Test Ab Per IEC 60512-11-10 Test 11j (IEC 60068-2-1)
2.10	Dry Heat	No damage likely to impair function	Subject mated specimen to +125℃ Duration time:168h Test Bb Per IEC 60512-11-9 Test 11i (IEC 60068-2-2)

Degree of protection			
2.11	IP6X	No dust ingress was found inside of the specimens after test 6.12 of EN 61984	IEC 60529
2.12	IPX7	No water ingress was found inside of the specimens after test 6.12 of EN 61984	IEC 60529

Vibration and shocks			
2.13	Simulated long life random vibration at increased levels	Micro interruption ≤ 1 µs No damage likely to impair function 6.16 of EN 50467	1 B, EN61373:1999, Clause 9
2.14	Shocks	No damage likely to impair function 6.16 of EN 50467	1 B, EN61373:1999, Clause 10

3. SUMMARY OF TEST RESULTS:

Examination of product – all test group

Test Group	Test Item	Requirement	Test Result	Judgment
Group A	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
	Crimp Tensile Strength	The force of retention ≥ 3200 N	No displacement after 3200N load	passed
	Mechanical strength impact	Connector and internal insulation shall no damage to impair normal use. A reduction of clearance and creepage distance is not allowed.	No damage likely to impair function	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
Group B	Visual and dimensional examination	Meets requirements of product drawing	No damage likely to impair function	passed
	Contact resistance	0.5mΩ Max.	0.09mΩ Max.	passed
	Mechanical operation (Durability)	After 500 operations cycles. No damage likely to impair normal use	No physical damage	passed
	Contact Resistance	The change of contact resistance shall be no more than 50 % of the reference value or ≤5 mΩ.	0.09mΩ Max.	passed
	Dielectric Voltage Withstand Test	No flashover or breakdown of voltage	No damage likely to impair function	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
Group C	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
	Temperature Rise Test	The temperature rise shall not exceed 45°C	30.4°C Max.	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
Group D	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
	Contact Resistance	0.5mΩ Max.	0.08mΩ Max.	passed
	Cold	No damage likely to impair function	No damage likely to impair function	passed
	Dry Heat	No damage likely to impair function	No damage likely to impair function	passed
	Contact Resistance	The change of contact resistance shall be no more than 50 % of the reference value or ≤5 mΩ.	0.1mΩ Max.	passed
	Insulation Resistance	Not less than 5000MΩ	>3.5 x10^{11}Ω	passed

	Dielectric Voltage Withstand Test	No flashover or breakdown of voltage	No flashover or breakdown of voltage	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
Group E	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
	IP6X	No dust ingress was found inside of the specimens after test	No dust ingress was found inside of the specimens after test	passed
	IPX7	No water ingress was found inside of the specimens after test	No water ingress was found inside of the specimens after test	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
Group F	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed
	Simulated long life random vibration at increased levels	Micro interruption ≤ 1 µs No damage likely to impair function	No micro interruption No damage likely to impair function	passed
	Shocks	No damage likely to impair function	No damage likely to impair function	passed
	Dielectric Voltage Withstand Test	No flashover or breakdown of voltage	No flashover or breakdown of voltage	passed
	Visual examination	Meets requirements of product drawing	No damage likely to impair function	passed