Performance Test, 250series FASTON Receptacle

1. INTRODUCTION

1.1 Purpose

Testing was performed on TE connectivity (TE) 250 series tin plated FASTON receptacle Connector to Evaluate performance when the plating layer has the oxidation phenomenon.

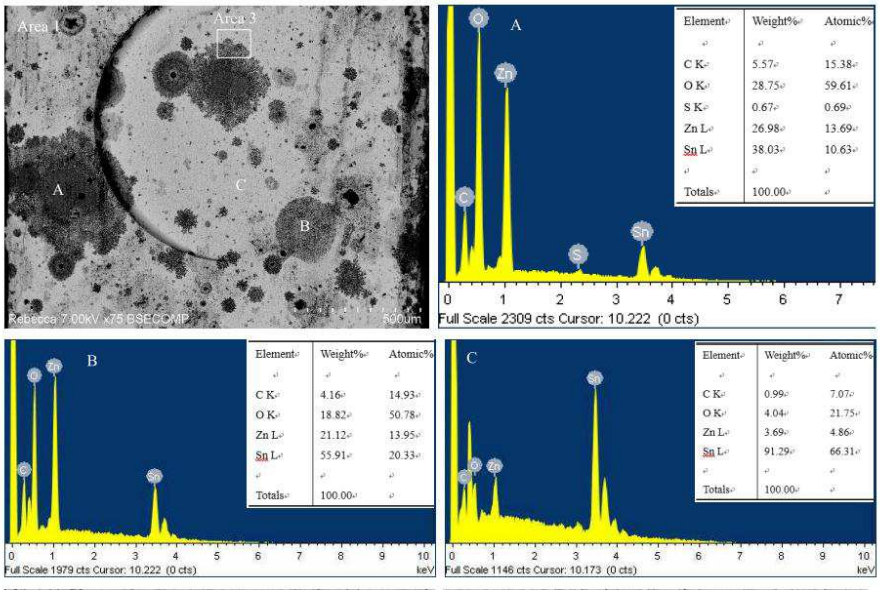

Figure 1 --- oxidation phenomenon and material analysis result

1.2 Scope

This report covers the electrical and environmental performance of the TE 250 series tin plated FASTON Receptacle. Testing was performed at the TE Connectivity Shanghai Electrical Components Test Laboratory. The associated test number is TP-14-01664.

1.3 Conclusion

Base on the test result, the oxidation phenomenon has no adverse impact on product function performance. And meet the TE'S product specification.

1.4 Test specimens

Test specimens identified in Table 1. [All designated with Part Number 41802 Rev AP2]

Table 1

Test sets	Quantity	Description
Group A	5	250 Series. FASTON Receptacles Crimped to 18AWG Wire
Group B	5	250 Series. FASTON Receptacles Crimped to 18AWG Wire
Group C	5	250 Series. FASTON Receptacles Crimped to 18AWG Wire
Group D	5	250 Series. FASTON Receptacles Crimped to 18AWG Wire

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1.5 Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C
Relative Humidity 25% to 80%

1.6 Test Sequence

The test specimens identified in paragraph 1.4 were subjected to the tests outlined in Table 2

Table 2- Test Sequence

Test or Examination	Test Set			
	A	B	C	D
	Sequence			
Visual Examination	1,5		1,5	1,5
Low Level Contact Resistance	2,4		2,4	2,4
Humidity-Temperature Storage	3			
Temperature rise		1		
Salt Spray			3	
Thermal Shock				3

Note The numbers indicate sequence in which tests were performed.

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2. TEST CONTENT

The test contents identified in paragraph 1.6 were subjected to the tests outlined in Table 3

Table 3- Test Requirements and Procedures

NO.	TEST ITEMS	REQUIREMENTS	PROCEDURES
2.1	Initial /Final Visual Examination	No physical damage.	Visually, dimensionally and functionally inspected per applicable inspection plan.EIA-364-18B
ELECTRICAL REQUIREMENTS			
2.2	Measurement of LLCR	6milliohms max (initial and after)	Measure between all different contacts. IEC60512-1-2002
2.3	Temperature rise	30 °C max	Measure between the two contacts with the biggest resistance. IEC60512-5-1-2002
ENVIRONMENTAL REQUIREMENTS			
2.4	Humidity-Temperature Cycling	No physical damage	Subject connectors to mated state at 40°C and 93% R.H for 96hrs. EIA-364-31B, Method II, condition C
2.5	Thermal Shock	No physical damage	First step is 30 minute at 105°C, second step is 30 minute at -40°C. 25 cycles total EIA 364-32
2.6	Salt Spray	No physical damage	5% salt solution fo 72 H EIA-364-26 condition A

3. SUMMARY OF TEST

3-1.Test Group A

3-1-1. Initial Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-1-2 Low level contact resistance (before) ----- test data see table 4

Table 4: LLCR test data before Humidity-Temperature Cycling

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.34	0.26	0.23	0.36	0.33

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3-1-3. Humidity-Temperature Storage.

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-1-4. Low level contact resistance (after) ----- test data see table 5

Table 5: LLCR test data after Humidity-Temperature Storage

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.37	0.35	0.27	0.29	0.37

3-1-5. Final Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-2.Test Group B

Temperature rise

Refer to Tables 6 for the Temperature Rise data when energized at 7 Amps.

Table 6

UNIT: °C

Final					
Sample No:	1	2	3	4	5
7A	34.95	33.50	38.00	32.90	32.55
T-Room	25.5				
ΔT	9.45	8.00	12.50	7.40	7.05

3-3. Test Group C

3-3-1. Initial Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-3-2 Low level contact resistance (before) ----- test data see table 7

Table 7: LLCR test data before Salt Spray

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.22	0.19	0.21	0.23	0.22

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3-3-3. Salt Spray

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-3-4. Low level contact resistance (after) ----- test data see table 8

Table 8: LLCR test data after Salt Spray

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.54	0.27	0.30	0.78	0.52

3-3-5. Final Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-4.Test Group D

3-4-1. Initial Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-4-2 Low level contact resistance (before) ----- test data see table 9

Table 9: LLCR test data after Thermal Shock

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.71	0.50	0.59	0.50	0.55

3-4-3. Thermal Shock

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

3-4-4 Low level contact resistance (after) ----- test data see table 10

Table 10: LLCR test data after Thermal Shock

UNIT: mΩ

Sample No:	1	2	3	4	5
Test data	0.62	0.52	0.61	0.49	0.63

3-4-5. Final Visual Examination

Specimens were visually examined and no evidence of physical damage detrimental to product Performance was observed.

4. TEST METHODS

4.1 Initial/Final Visual Examination

Specimens were visually examined for evidence of physical damage detrimental to product performance. Visual examinations were performed in accordance with Test Specification EIA 364-18B.

4.2 Low Level Contact Resistance

4.2.1 The test specimen was wired as specified in the referencing document. Subsequent measurements were made at the same point to reduce variability due to path length changes.

4.2.2 Measurement

4.2.2.1 Measure and record the contact resistance of the specimen under test with a test current of 100 mA maximum and 20 millivolts open circuit (source) voltage maximum.

4.2.2.2 Four wires resistance measurement method was used.

4.3 Temperature rise

4.3.1

The test sample initial status were tested in the as-specified state, Thermo couple were soldered on the Crimp.

4.3.2

Measurement

Wired all terminal poles and connected to DC power supply, Measure and record the temperature rising when the temperature is steady

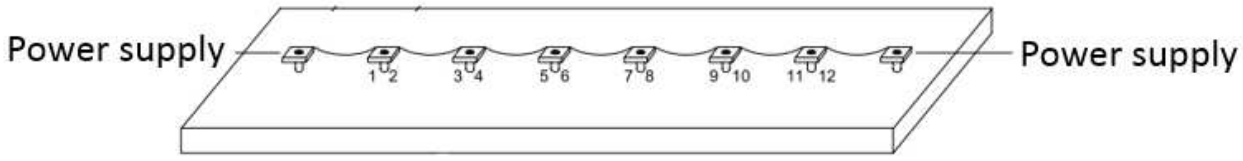

Figure 2 Temperature rise set up layout

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4.4 Humidity-Temperature Storage.

Execute visual check before the test, Fix the test sample to the tester. Edit the test procedure according to test Standard and run Humidity -Temperature Chamber. Execute visual check after the test, and then export the Test profile. Test Condition: Mated connector 40℃ at 93%RH 96 h.

Test curve

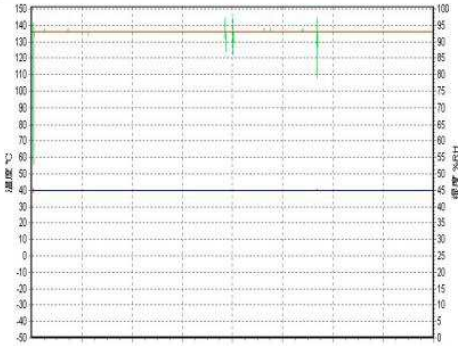

Figure 3

4.5 Thermal Shock

Execute visual check before the test, Fix the test sample to the tester. Edit the test procedure according to test Standard and run thermal shock chamber. And then execute visual check after the test, and Then export the Test profile. Test condition: Mated connector -40℃ to 105℃ 30min. Making this a cycle, Repeat 25 cycles.

Test cycle

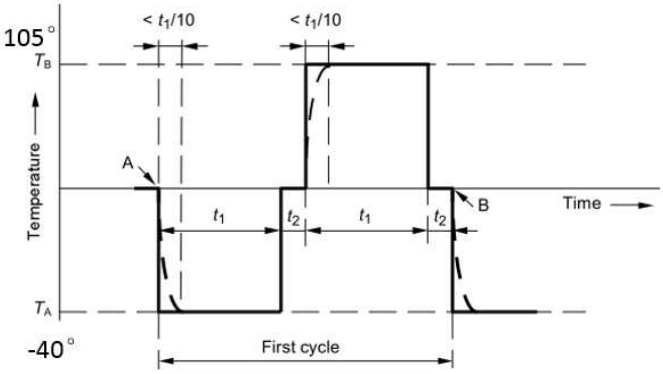

Figure 4

4.6 Salt Spray

4.6.1
Execute visual check before the test, Fix the test sample to the tester. Edit the test procedure according to test standard and run salt spray chamber. Execute visual check after the test

4.6.2

Test Condition: 5% salt solution for 72h.

No.	Item	Requirement	Actual data
1	Electrical conductivity of pure water	5 μS/cm max.	2.0 μS/cm
2	The pH of the sprayed solution	6.5-7.2	6.7
3	Specific gravity of salt solution	1.027~1.041	1.038
4	Quantity of salt fog	(1.0~2.0)mL/h/80cm²	1.4 mL/h/80cm²

Figure 5

5. EQUIPMENT

5.1 Calibration Statement

All equipment containing a calibration number is calibrated and traceable through TE Connectivity (TE) to the National Institute of Standards and Technology (NIST).