Test Report

3.18 CLUSTER REC AMPLIVAR

1. INTRODUCTION

1.1 Purpose

Testing was performed on the TE Connectivity* (TE) 3.18 CLUSTER REC AMPLIVAR TYPE 63453-1,63454-1,63455-1,1217172-1,1217174-1 and 1217173-1 using current product to determine their conformance to the requirements (108-2008 Rev H) of LLCR, Crimp Tensile strength, Temperature rising and Cross section.

1.2 Scope

This report covers the electronical, mechanical and cross section of 3.18 CLUSTER REC AMPLIVAR TYPE 63453-1,63454-1,63455-1,1217172-1,1217174-1 and 1217173-1. Testing was performed at TE Connectivity Shanghai Electrical Test Laboratory between Aug. 8th, 2019 and Oct.14th, 2019.The associated test number is TP-19-02163.

1.3 Conclusion

Based on the test results, all the specimens meet the performance requirements list in test sequence. The product could terminate the 3 magnet wires without stripping the coating.

1.4 Test Specimens

The specimens identified in Table 1 were submitted for test which all dimensions followed by Product drawing and crimp parameter followed 114-2019 Rev. J

Test Set ID	Qty.	Part No.	Specimen Description	Crimp Height
1	20	63453-1	Receptacle 63453-1 crimp with 3xØ0.32mm Cu magnet wire	1.17 ±0.05 mm
2	20	63453-1	Receptacle 63453-1 crimp with 3xØ0.32mm Al magnet wire	1.17 ±0.05 mm
3	20	63453-1	Receptacle 63453-1 crimp with 3xØ0.49mm Cu magnet wire	1.37 ±0.05 mm
4	20	63453-1	Receptacle 63453-1 crimp with 3xØ0.51mm Al magnet wire	1.37 ±0.05 mm
5	20	63454-1	Receptacle 63454-1 crimp with 3xØ0.49mm Cu magnet wire	1.51 ±0.05 mm
6	20	63454-1	Receptacle 63454-1 crimp with 3xØ0.51mm Al magnet wire	1.51 ±0.05 mm
7	20	63454-1	Receptacle 63454-1 crimp with 3xØ0.91mm Cu magnet wire	1.85 ±0.05 mm
8	20	63454-1	Receptacle 63454-1 crimp with 3xØ0.91mm Al magnet wire	1.85 ±0.05 mm
9	20	63455-1	Receptacle 63455-1 crimp with 3xØ0.91mm Cu magnet wire	1.93 ±0.05 mm
10	20	63455-1	Receptacle 63455-1 crimp with 3xØ0.91mm Al magnet wire	1.93 ±0.05 mm
11	20	63455-1	Receptacle 63455-1 crimp with 3xØ1.29mm Cu magnet wire	2.41 ±0.05 mm
12	20	63455-1	Receptacle 63455-1 crimp with 3xØ1.30mm Al magnet wire	2.41 ±0.05 mm

Table 1 Sample list

1.5 Test Sequence

The test specimens referred to in paragraph 1.4 and Table 1 were tested according to the test sequences listed in table 2.

Test or Examination	Test Group	
	1	2
	Test Sequence	
Examination of Product	1	1
Low Level Contact Resistance	2	
Temperature rise vs current	3	
Crimp Tensile Strength		2
Final examination of product	4	3

Table 2-Test Sequence

1.6 Environmental Condition

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

- Temperature: 15 to 35° C
- Relative Humidity: 25 to 75%

2. SUMMARY OF TESTING

2.1 Initial Examination of Product - All Test Groups

Specimens were visually examined according to EIA 364-18B and no evidence of physical damage detrimental to the operation of the part was observed.

2.2 Low Level Contact Resistance

All LLCR measurements taken at 100 milliamperes maximum and 20 millivolts maximum open circuit voltage were less than 3.0milliohms initial and less than of 6milliohms(Final).

2.3 Temperature Rise vs. Current

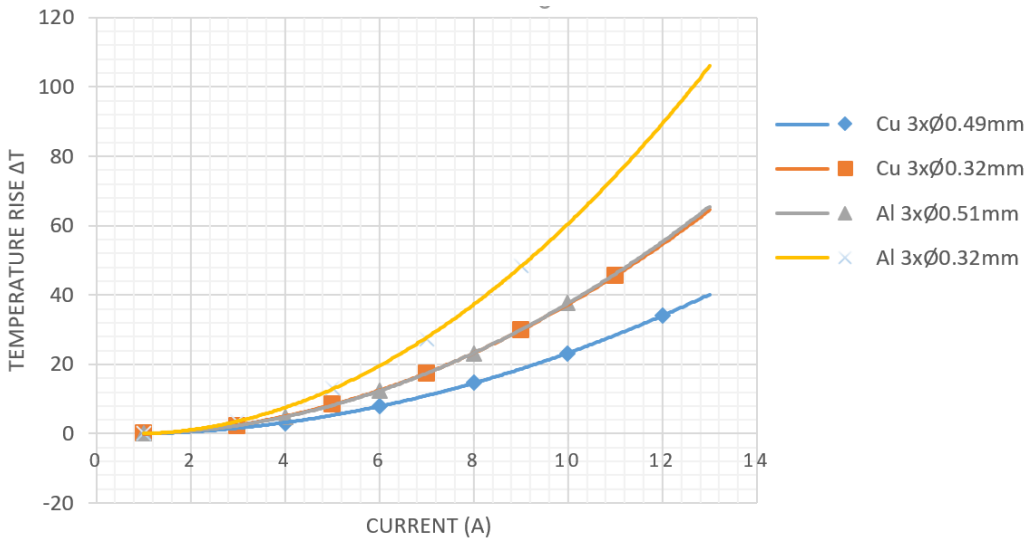

Fig 1. 63453-1 Temperature Rise

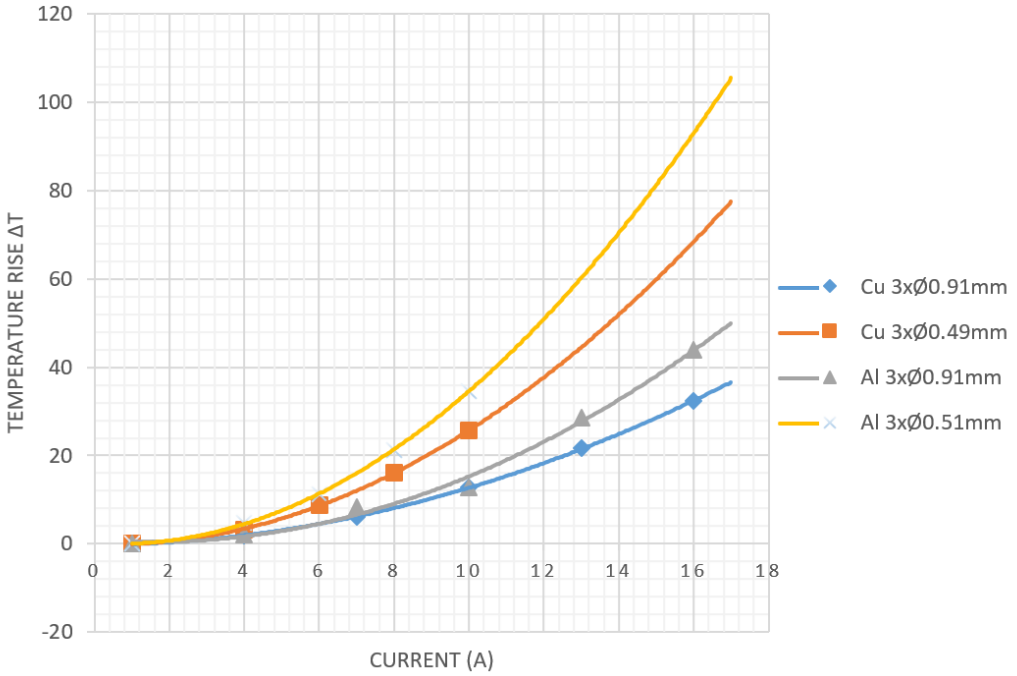

Fig 2. 63454-1 Temperature Rise

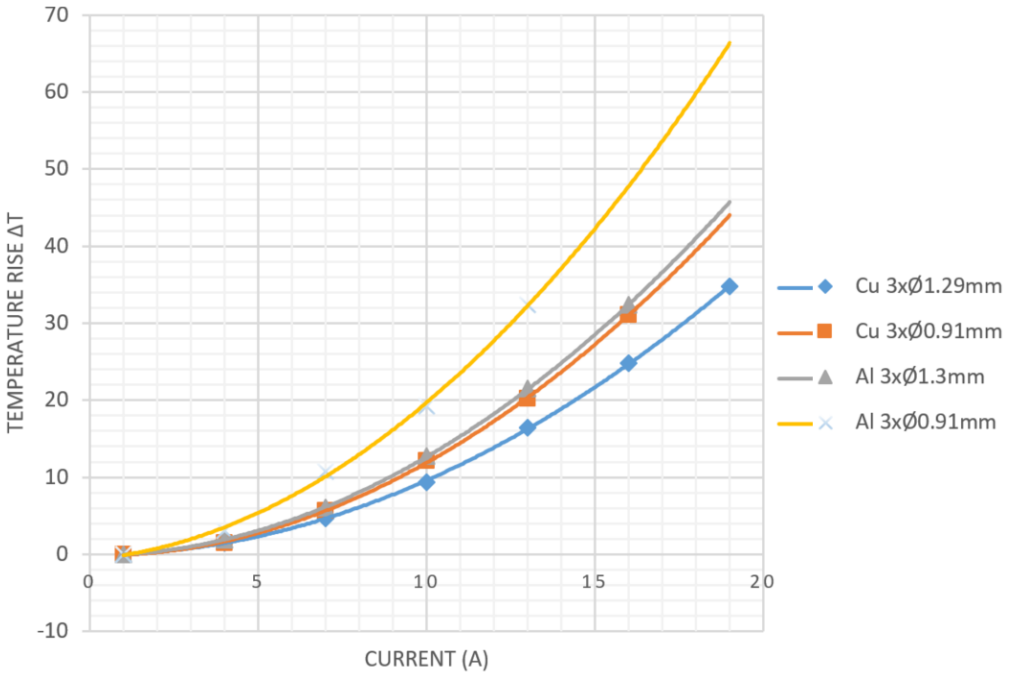

Fig 3. 63455-1 Temperature Rise

2.4 Crimp Tensile Strength

Test data shown as below Table.3,4 and 5: (Unit: N)

Test Set	63453-1 Crimp Tensile Strength			
Wires	3xØ 0.51mm Al	3xØ 0.32mm Al	3x Ø 0.32mm Cu	3x Ø 0.49mm Cu
Max.	21.43	8.11	22.09	48.18
Min.	20.27	7.43	21.45	46.66
Mean	20.85	7.80	21.73	47.84
N	10	10	10	10

Table.3 63453-1 Crimp Tensile Strength

Test Set	63454-1 Crimp Tensile Strength			
Wires	3xØ 0.91mm Al	3xØ 0.51mm Al	3x Ø 0.93mm Cu	3x Ø 0.49mm Cu
Max.	64.90	21.50	170.25	48.39
Min.	61.91	19.28	165.08	46.26
Mean	63.65	20.67	168.00	47.54
N	10	10	10	10

Table.4 63454-1 Crimp Tensile Strength

Test Set	63455-1 Crimp Tensile Strength			
Wires	3xØ 1.3mm Al	3xØ 0.91mm Al	3x Ø 1.29mm Cu	3x Ø 0.91mm Cu
Max.	134.23	64.61	342.14	168.81
Min.	131.65	60.14	335.42	167.33
Mean	132.66	62.92	339.55	168.21
N	10	10	10	10

Table.5 63455-1 Crimp Tensile Strength

3. TEST METHODS

3.1 Examination of Product

Specimens were visually examined as stated in TE Connectivity Product Specification 108-5205, Rev. E, paragraph 3.4 and in accordance with test procedure EIA-364-18B.

3.2 Low Level Contact Resistance

Specimens were subjected to a low level contact resistance test as stated in TE Connectivity Product Specification 108-5574,Rev.B, Paragraph 3.5 and in accordance with test procedure EIA-364-23C. Using a four terminal measuring technique, low level contact resistance was measured using a test current maintained at a 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage. The measurement points were at the locations indicated in Figure 1.

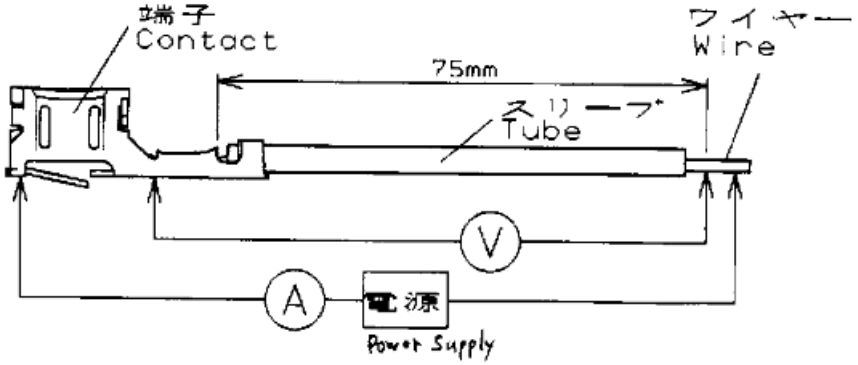

Fig 1 Low Level Connect Resistance

3.3 Temperature Rise vs. Current

Temperature rise curves were produced by measuring individual contact crimp temperatures at a minimum of 5 different current levels. These measurements were plotted to produce a temperature rise vs current curve. Type “T” (30 AWG) thermocouples were attached to the crimps of the individual contacts to measure their temperatures. The ambient temperature was then subtracted from this measured temperature to find the temperature rise. When the temperature rise of 3 consecutive readings taken at 5 minute intervals did not differ by more than 1°C, the temperature measurement was recorded. Testing was conducted in accordance with EIA-364-70B, Method 2.

3.4 Crimp Tensile

The specimen was held in a slotted plate that was mounted to a free floating x-y rotational table to allow for axial alignment. The x-y rotational table was attached to the base of the tensile/compression machine. The wire was clamped in a jaw that was attached to the moveable crosshead of the tensile/compression machine. Force was then applied in an upward direction at a rate of 1.0 inch per minute until failure occurred. Wire tensile strength for Test Set 5 was determined by pulling one wire specimen. The wire was fed around the barrel and clamped at the end. Force was then applied in an upward direction at a rate of 1.0 inch per minute until failure. The wire tensile strength values for the wires in Test Sets 6 through 8 were calculated using the maximum wire tensile strength from breakage that occurred outside the crimp area during testing. All minimum crimp tensile requirements for all test sets were calculated from 70% of the wire tensile values for each wire size. Testing was conducted in accordance with EIA-364-8.