Date :19th April, 2024.

Customer : Indian Metals Solutions Pvt Ltd.

Lab Address : SURVEY NO 115, C/O JAYSUKHBHAI DOBARIYA
PADDHRI BYPASS, RAJKOT JAMNAGAR HIGHWAY
NEAR ESSAR PETROL PUMP, MOVIYA
Rajkot, Gujarat, 360110, INDIA.
dj@indianmetal.solutions

Contact Person : Mr. Dhananjay Joshi.

Project Number : 4790918269.

Scope : cUL US Lab qualification under UL Witness Test Data Program (WTDP) as per UL 486A-486B for non-insulated connector/lugs. (CCN:ZMVV).

Subject : Letter Report for completion of Lab Qualification Project 4790918269 under UL WTDP.

Dear Mr. Dhananjay Joshi,

We have completed our work under project 4790918269 and this letter will serve as a letter report of our findings and to close out the Project.

For the record we are using requirements from the below standards:

1) UL 486A-486B, Wire Connectors, Edition 3, Revision Date 20/07/2023.
2) CAN/CSA-C22.2 No. 65-18, Wire Connectors, Edition 6, Revision Date 20/07/2023.

DETAILED EVALUATION OF LAB COMMENTS AND REQUIREMENTS

The following tests were witnessed in accordance with the referenced requirements:

CCN : ZMVV

Sl. No.	Test Name / Lab requirement	Requirements - standard/clause	Comments
1	Secureness Test (portion of the Mechanical Sequence)	UL486A-486B/ 7.4, 8.4, 9.4 and 7.3.2, 7.4.1, 9.3.2.	Test procedure, process, test method and test Set up (Equipment) verified and found OK. The Instrument is capable of test from minimum conductor range 16 AWG(CU-0.9Kg), 12 AWG(AL-0.7Kg) up to maximum conductor range 2000 Kcmil (AL-54.5Kg & CU-109Kg).
2	Pull out Test (portion of the Mechanical	UL486A-486B/7.4, 8.4, 9.4 and 7.3.3,	Test procedure, process, test method and test Set up (Equipment) verified and found OK.

	Sequence)	7.4.2, 9.3.4.	The instrument is capable of testing from 134N (13.66Kg) up to 4450N (454Kg).
3	Static Heating Sequence	UL486A-486B/ 7.3/8.3/9.3	Test procedure, process, test method and test Set up (Equipment) verified and found OK. Current source range (output)from 50A to 1310 @60Hz.
4	Current Cycling Test	UL486A-486B/ 7.2/8.2/9.2	Test procedure, process, test method and test Set up (Equipment) verified and found OK. Current source range (output) 50A to 1310A @60Hz.
5	Ambient Temperature Measurement	UL486A-486B/ 9.1.2.	Ambient Temperature found within the standard range. Ambient Temperature declaration by customer is 25 deg. C (+/- 4 deg. C). Temperature and humidity measurement instruments found within calibration range.
6	Sampling requirement	UL486A-486B/ 8.1.	Customer is well aware of sampling process.
7	Conductor Stripping / Stranding	UL486A-486B/ 9.1.6.	Customer is well aware of stripping requirement process.
8	Preparation of Specimens	UL486A-486B/ 9.1.8.	Customer has successfully demonstrated the preparation of specimens.
9	Tightening Torque / Crimping requirement	UL486A-486B/ 9.1.9.	Customer is well aware of conductor assembly process with respect to torque and crimp. Demonstrated successfully.
10	Conductor Type / details	UL486A-486B/ 10.14. (Table 15 and 16)	Customer has successfully demonstrated the testing with CU and AL concentric stranded and solid conductor as per UL - US requirements. And Compact stranded copper conductor for cUL requirement.
11	Test Sequence	UL486A-486B/ 7.1.1. / 8.1.2./	Customer is well aware of test sequence and demonstrated successfully.
12	Calibration Report for testing and measuring equipment.	-	All the calibration reports are in place and easily accessible.

Conclusion:

This completes the work anticipated under Project 4790918269 and we are closing the project with this Letter. You will be invoiced for the charges incurred to date. All information related to this project will be placed in our files for future reference.

Your business is very important to us and if there is any additional information that we may provide to you about the investigation or UL's other services, please do not hesitate to contact us.

Sincerely,

Nikhil Bhatt
Sr. Project Engineer
UL Solutions

Reviewed by:

John Tsavalos
Sr. Staff Engineer
UL Solutions