






**ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION**  
(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)  
ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.  
EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33  
Fax : +91 (0265) 2638382  
E-mail : erda@erda.org  
Web : http://www.erda.org



## TEST REPORT

**SHEET NO.: 1 OF 9**

<b>NAME &amp; ADDRESS OF CUSTOMER</b> <b>M/s. Epoxy Terminal &amp; Equipment Pvt. Ltd.</b> Plot No : 6B, Phase -III APIIC, IDA, Pashamylaram, Medak, Telangana India 502 307	<b>REPORT NO.:</b> RP-1819-021275 <b>DATE</b> : 29/08/2018	
	<b>CUSTOMER REF. NO.:</b> NIL <b>DATED</b> : 08/06/2018	
	<b>DATE OF SAMPLE RECEIPT</b>	<b>DATE OF TESTING</b>
	08/06/2018	02/07/2018 to 13/08/2018
<b>SAMPLE DESCRIPTION</b> <b>1.1 kV 2150 A Epoxy Bushing</b> Rated Voltage : 1.1 kV  Rated Current : 2150 A  Embossing : ETE  Insulator Glaze : Epoxy	<b>SAMPLE IDENTIFICATION</b> Serial No. : 03/18052018/B  Make : M/s. Epoxy Terminal & Equipment Pvt. Ltd.  Year of Mfg.: 2018  ERDA S.C. No.: ERDA-00261842	
<b>TEST DETAIL</b> As per <b>SHEET NO.:</b> 2 OF 9  ENCLOSURES: DRG. No.: ETB 0007 REV 1  TEST WITNESSED BY: Mr. Ulpesh Parmar - M/s. Epoxy Terminal & Equipment Pvt. Ltd.  REMARKS: As per <b>SHEET NO.:</b> 3 OF 9, 4 OF 9, 7 OF 9 & 8 OF 9		
<div style="display: flex; justify-content: space-between;"><div> <b>PREPARED BY</b></div><div> <b>CHECKED BY</b></div><div> <b>A.S.Khopkar</b> <b>APPROVED BY</b></div></div>		
<b>Note</b> : 1. This report relates only to the particular sample received in good condition for testing at ERDA, Vadodara. 2. This report cannot be reproduced in part under any circumstances. 3. Publication of this report requires prior permission in writing from Director, ERDA. 4. Only the tests asked for by the customer have been carried out. 5. In case of any dispute, Vadodara will be the exclusive jurisdiction & shall be construed as where the cause has arisen. <b>Caution:</b> ERDA is not responsible for the authenticity of photocopied or reproduced test reports. ERDA provides support to customers for verification of the authenticity of test reports issued by ERDA.		

TC 2599740



Certificate No. : TC-5389

## ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : http://www.erda.org



**REPORT NO.:** RP-1819-021275

**SHEET NO.:** 2 OF 9

**DATE** : 29/08/2018

### TEST DETAIL :

#### **1 Routine Test before type test.**

- 1.1 Dry power-frequency withstand voltage test
- 1.2 Measurement of partial discharge quantity

#### **2 Type test**

- 2.1 Dry lightning impulse voltage withstand test
- 2.2 Wet Power Frequency Voltage withstand test
- 2.3 Cantilever load Withstand Test

#### **3 Routine Test after type test**

- 3.1 Dry power-frequency withstand voltage test
- 3.2 Measurement of partial discharge quantity

*S.M.*

**PREPARED BY**

*P. Patel*

**CHECKED BY**



TC 2599633

**ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION**

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : http://www.erda.org



<b>REPORT NO.:</b> RP-1819-021275		<b>SHEET NO.:</b> 3 OF 9		
<b>DATE</b> : 29/08/2018				
<b>Routine Test before type test</b>				
<b>Atmospheric condition:</b>		Dry bulb Temperature : 26.0 °C Wet bulb Temperature : 22.0 °C Atmospheric Pressure : 748.2 mm of Hg		
Sr. No.	Test Conducted (Cl.No. & IS)	Test Requirement	Obtained Results	Remark
1.1	<b>Dry power frequency withstand voltage test</b> (As per customer requirement & test procedure followed as per cl. no. 11.13 of IS: 2099 - 1986)	The power frequency voltage of 5 kVrms shall be applied between the H.V. terminal of bushing & earth.  The test duration shall be 60s.  No flashover or puncture shall be occurred during the test.	The power frequency voltage of 5 kVrms was applied between the H.V. terminal of bushing & earth.  The test duration was 60s.  No flashover or puncture was occurred during the test.	Conforms
1.2	<b>Measurement of partial discharge quantity</b> (As per customer requirement & test procedure followed as per cl. no. 11.14 of IS: 2099 - 1986) Measurement of partial discharge quantity shall be carried out - At $1.5U_m/\sqrt{3} = 0.6 \text{ kV}$ - At $1.05U_m/\sqrt{3} = 1.2 \text{ kV}$	Max. 10 pC Max. 100 pC	01 pC 01 pC	Conforms Conforms
 <b>PREPARED BY</b>		 <b>CHECKED BY</b>		



TC 2599741



# ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : http://www.erda.org



REPORT NO.: RP-1819-021275

SHEET NO.: 4 OF 9

DATE : 29/08/2018

**Atmospheric condition :** Dry bulb Temperature : 25.0 °C  
Wet bulb Temperature : 21.0 °C  
Atmospheric Pressure : 743.3 mm of Hg

## 2.1 Dry lightning impulse voltage withstand test

(As per customer requirement & test procedure followed as per cl. no. 11.4 of IS: 2099 - 1986)

### Test Parameters:

Rated Voltage : 1.1 kV  
Test Voltage : 20 kVp  $\pm$  3%  
No. of Shots to be applied: 15 +ve & 15 -ve Polarity shots

### Test Observation:

Calibration Pulse : 12.260 kVp, Wave Shape: 1.296 / 47.787  $\mu$ s  
No. of Shots applied : Calibration pulse, 15 +ve & 15 -ve Polarity shots  
No. of Shots recorded : Calibration pulse, First & Last shot (for both polarity)

No. of Shot	Test Voltage Applied in kVp	
	Positive Polarity	Negative Polarity
1.	20.344	19.687
2.	19.812	20.010
3.	19.555	20.059
4.	19.721	19.746
5.	19.717	19.927
6.	19.874	19.806
7.	19.629	19.677
8.	19.653	20.055
9.	19.758	20.048
10.	19.661	20.217
11.	19.754	19.715
12.	19.858	20.218
13.	19.471	19.958
14.	19.771	19.947
15.	19.689	19.768

REMARKS: Conforms.

## 2.2 Wet Power Frequency Voltage withstand test

(As per customer requirement & test procedure followed as per cl. no. 11.3 of IS: 2099 - 1986)

### Test requirement:

The test Voltage of 5 kVrms corrected to reference atmospheric condition is applied between the H.V. terminals & earth for one minute duration under artificial rainfall condition.

REMARKS: Conforms.

PREPARED BY

CHECKED BY



TC 2599635



# ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

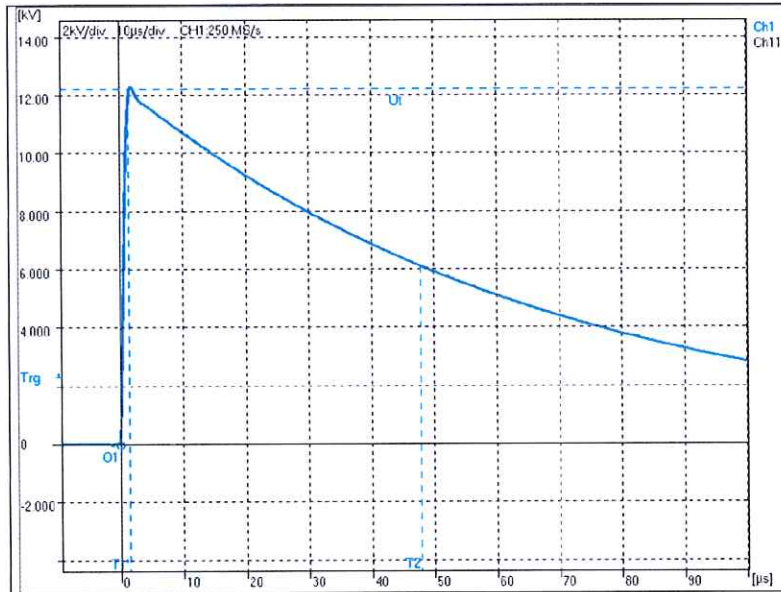
Web : http://www.erda.org



TEST REPORT NO. : RP-1819-021275  
DATE : 29/08/2018

SHEET NO.: 5 of 9

## DRY LIGHTNING IMPULSE VOLTAGE WITHSTAND TEST



Comment: LI RW

### CALIBRATION PULSE

$U_p = 12.26 \text{ kV}$

$T_1 = 1.30 \text{ } \mu\text{s}$

$T_2 = 47.79 \text{ } \mu\text{s}$

TC 2599384

PREPARED BY



CHECKED BY



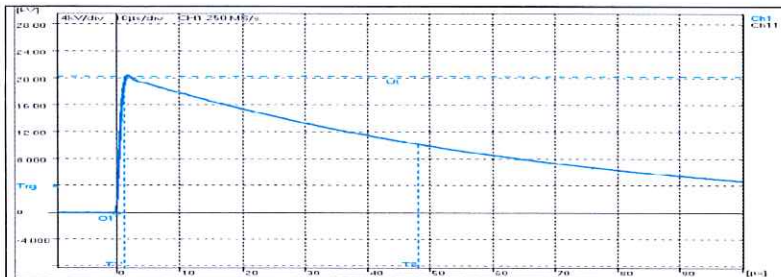
**ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION**  
 (Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)  
 ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.  
 EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33  
 Fax : +91 (0265) 2638382  
 E-mail : erda@erda.org  
 Web : http://www.erda.org



**TEST REPORT NO. : RP-1819-021275**  
**DATE : 29/08/2018**

**SHEET NO. : 6 of 9**

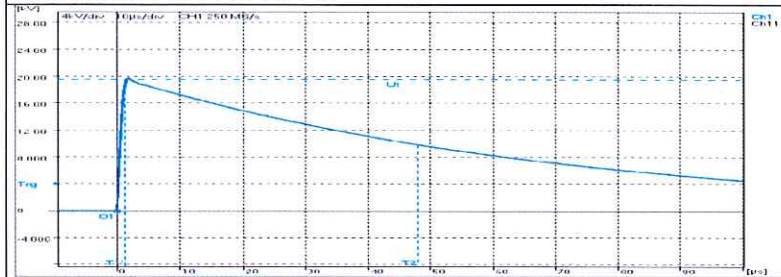
**DRY LIGHTNING IMPULSE VOLTAGE WITHSTAND TEST**



**FIRST SHOT**

$U_p = 20.34 \text{ kV}$   
 $T_1 = 1.30 \mu\text{s}$   
 $T_2 = 48.11 \mu\text{s}$

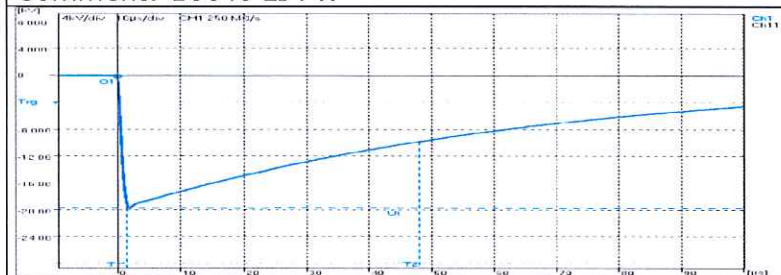
Comment: 100% LI FW



**LAST SHOT**

$U_p = 19.69 \text{ kV}$   
 $T_1 = 1.29 \mu\text{s}$   
 $T_2 = 48.03 \mu\text{s}$

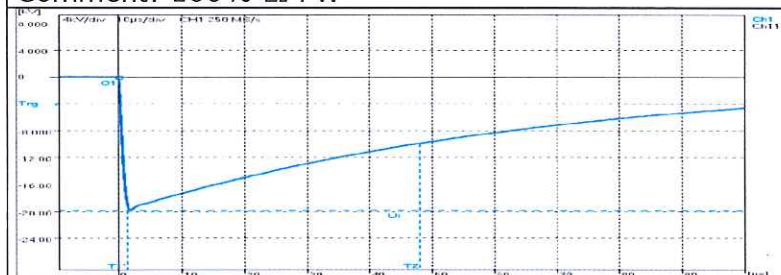
Comment: 100% LI FW



**FIRST SHOT**

$U_p = -19.69 \text{ kV}$   
 $T_1 = 1.30 \mu\text{s}$   
 $T_2 = 48.16 \mu\text{s}$

Comment: 100% LI FW



**LAST SHOT**

$U_p = -19.77 \text{ kV}$   
 $T_1 = 1.30 \mu\text{s}$   
 $T_2 = 48.13 \mu\text{s}$

Comment: 100% LI FW

*S.M.*

**PREPARED BY**



*Q. Patel*

**CHECKED BY**

**TC 2599385**



Certificate No. : TC-5389

## ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : http://www.erda.org



TEST REPORT NO: RP-1819-021275

SHEET No. 7 OF 9

DATE : 29/08/2018

Sr. No.	Particular of Tests & Cl. No.	Requirement as per Specification	Obtained Value/ Observation	Remarks
2.3	<b>Cantilever load withstand test</b> [Cl. No. 11.10 of IS 2099 & as per customer's requirement]  (The load of 2000 N* applied perpendicular to the axis of the bushing at the mid-point of the terminal for one minute) ERDA-00261842	The bushing shall be considered to have passed the test if there is no evidence of damage (deformation or rupture) and if it has withstood a repetition of routine tests without significant change from previous results.	No evidence of damage was observed in bushing and bushing withstood repetition of routine tests (Dry power frequency withstand voltage test and Measurement of partial discharge quantity) without any significant change from previous results.	Conforms

**Note:** "\*" As specified by customer.

  
PREPARED BY

  
CHECKED BY



TC 2603333



Certificate No. : TC-5389

## ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : http://www.erda.org



<b>REPORT NO.:</b> RP-1819-021275		<b>SHEET NO.:</b> 8 OF 9		
<b>DATE</b> : 29/08/2018				
<b>Routine Test after type test</b>				
<b>Atmospheric condition:</b>		Dry bulb Temperature : 26.0 °C Wet bulb Temperature : 22.0 °C Atmospheric Pressure : 748.2 mm of Hg		
Sr. No.	Test Conducted (Cl.No. & IS)	Test Requirement	Obtained Results	Remarks
3.1	<b>Dry power frequency withstand voltage test</b> (As per customer requirement & test procedure followed as per cl. no. 11.13 of IS: 2099 - 1986)	The power frequency voltage of 5 kVrms shall be applied between the H.V. terminal of bushing & earth. The test duration shall be 60s.  No flashover or puncture shall be occurred during the test.	The power frequency voltage of 5 kVrms was applied between the H.V. terminal of bushing & earth.  The test duration was 60s.  No flashover or puncture was occurred during the test.	Conforms
3.2	<b>Measurement of partial discharge quantity</b> (As per customer requirement & test procedure followed as per cl. no. 11.14 of IS: 2099 - 1986) Measurement of partial discharge quantity shall be carried out - At $1.5U_m/\sqrt{3} = 0.6$ kV - At $1.05U_m/\sqrt{3} = 1.2$ kV	Max. 10 pC Max. 100 pC	01 pC 01 pC	Conforms Conforms
	<b>Change in measurement of partial discharge quantity</b> Change in partial discharge quantity - At $1.5U_m/\sqrt{3} = 0.6$ kV - At $1.05U_m/\sqrt{3} = 1.2$ kV	$\leq 05$ pC# $\leq 05$ pC#	0 pC 0 pC	Conforms Conforms
<b>Note:</b> "#" Requirement of change in measurement of partial discharge quantity was specified by customer.				
 <b>PREPARED BY</b>		 <b>CHECKED BY</b>		

TC 2599742





Certificate No. : TC-5389

## ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

(Accredited by the National Accreditation Board for Testing and Calibration Laboratories, Govt. of India)

ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, India.

EPABX : +91 (0265) 2642942, 2642964, 2642377, 3043128 / 29 / 30 / 31 / 33

Fax : +91 (0265) 2638382

E-mail : erda@erda.org

Web : <http://www.erda.org>



**TEST REPORT NO.:** RP-1819-021275

**DATE** : 29/08/2018

**SHEET NO.:** 9 of 9

### PHOTOGRAPH OF SAMPLE



### PHOTOGRAPH OF NAME PLATE



  
**PREPARED BY**



  
**CHECKED BY**

**TC 2599606**

