



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**

ULR No.: TC538923000012464F

SHEET No.: 1 OF 6

| | | |
|--|---|--------------------------------------|
| NAME & ADDRESS OF CUSTOMER M/s. Sun India Fire Safety Systems 211, Sangam Apartments, Pocket-24, Sector-24, Rohini, Delhi-110085. | TEST REPORT No.: RP-2324-006021 DATE OF ISSUE : 26/05/2023 | |
| | CUSTOMER REF. No. SIF/ERDA/CE(MM)/23- 24/27 | DATE 02/05/2023 |
| | DATE OF SAMPLE RECEIPT 04/05/2023 | DATE OF TESTING 22/05/2023 |
| | SAMPLE IDENTIFICATION : ERDA Sample Code No.: ERDA-00518556 Serial No: 1 Make : M/s. ARC Insulation & Insulations Pvt. Ltd. End User: CE(MM) HPSEBL, Shimla Year of Mfg.: 2023 | |
| SAMPLE DESCRIPTION : (As provided by the customer) FRP EARTHING/DISCHARGE ROD Rated voltage: 33 kV Total Length: 15 feet Type : Telescopic type | TEST SPECIFICATION : As per customer's requirement & Generally test procedure was followed as per IEC:60060-1-2010 | |
| TEST DETAILS : 1) Lightning Impulse Voltage Withstand Test 2) Dry Power Frequency Voltage Withstand Test 3) Wet Power Frequency Voltage Withstand Test | TEST SPECIFICATION : As per customer's requirement & Generally test procedure was followed as per IEC:60060-1-2010 | |
| ENCLOSURE : Drg. No.: ARC/FRP/22-23/06 REV-00 SHEET-01 | | |
| TEST WITNESSED BY : 1. Mr. Rajendra Kumar Jethi –M/s. Sun India Fire Safety Systems 2. Mr. Chandan Kumar Sharma – M/s. HPSEBL, Shimla 3. Mr. Chirag Prajapati- M/s. QSS (Delhi) | | |
| SEAL DETAILS : The above sample was received with duly signed by : 1. Q.S.S(Delhi) 2. HPSEBL Officer | | |
| Note: Tests were carried out without Earthing Cable. | | |
| REMARKS : The sample CONFORMS to the requirements of above mentioned test specification with respect to the tests carried out. | | |
| CHECKED BY  P. Patel | APPROVED BY  Nitin S. Chitte | |
| Note: 1. This report relates only to the particular sample received for testing in good condition 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. This report shall not be used for any purpose such as PR brochures, propaganda, advertisement and/or legal proceedings, unless for the granted purpose. 5. Only the tests asked for by the customer have been carried out. 6. Particulars of manufacturer/supplier, given in this report are based on information supplied by the customer, along with the test request/sample. ERDA does not assume any responsibility for the correctness of the information for above mentioned Sample Under Test (SUT). ERDA will not be responsible for any changes in SUT made after the test. This test report is given as per instrument status while testing. 7. In case of any dispute, Vadodara will be the exclusive jurisdiction & shall be construed as where the cause has arisen. | | |
| Caution: 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 within 10 years of date of issue of report | | |

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Discipline: Electrical

Group: Conductors & Conducting Materials

TEST REPORT No.: RP-2324-006021

SHEET No.: 2 OF 6

ULR No.: TC538923000012464F

DATE OF ISSUE : 26/05/2023

- 1) Lightning Impulse Voltage Withstand Test (Across test length of 15 feet)
 (As per customer's requirement & generally test procedure was followed as per Cl. No. 7.3.1.2 of IEC:60060-1-2010)

ATMOSPHERIC CONDITION: Dry bulb temperature : 30.0 °C
 Wet bulb temperature : 26.0 °C
 Atmospheric Pressure : 759 mm of Hg.

TEST PARAMETERS:

Rated Voltage : 33 kV

Test Voltage : 170 kVp ±3%

No. of shots applied : Calibration pulse, 15 +ve & 15 -ve Polarity shots

No. of shots recorded : Calibration pulse, First & Last shot for both polarities

CALIBRATION PULSE DETAIL : Peak Magnitude : 99.948 kVp
 Wave Shape : 1.202 μs/ 52.040 μs

| Sr. No. | Test Voltage Applied in kVp | |
|---------|-----------------------------|-------------------|
| | Positive Polarity | Negative Polarity |
| 1 | 169.134 | 169.426 |
| 2 | 169.105 | 169.460 |
| 3 | 170.581 | 171.079 |
| 4 | 170.558 | 170.569 |
| 5 | 170.468 | 170.593 |
| 6 | 170.543 | 170.423 |
| 7 | 170.439 | 170.658 |
| 8 | 170.565 | 170.418 |
| 9 | 170.495 | 170.516 |
| 10 | 170.445 | 170.516 |
| 11 | 170.554 | 170.541 |
| 12 | 170.489 | 170.477 |
| 13 | 170.513 | 170.613 |
| 14 | 170.468 | 170.452 |
| 15 | 170.395 | 170.342 |



Test Result : Withstood

Note: Waveforms as per sheet no. 3 of 6 to 4 of 6

[Signature]

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TEST REPORT NO.: RP-2324-006021

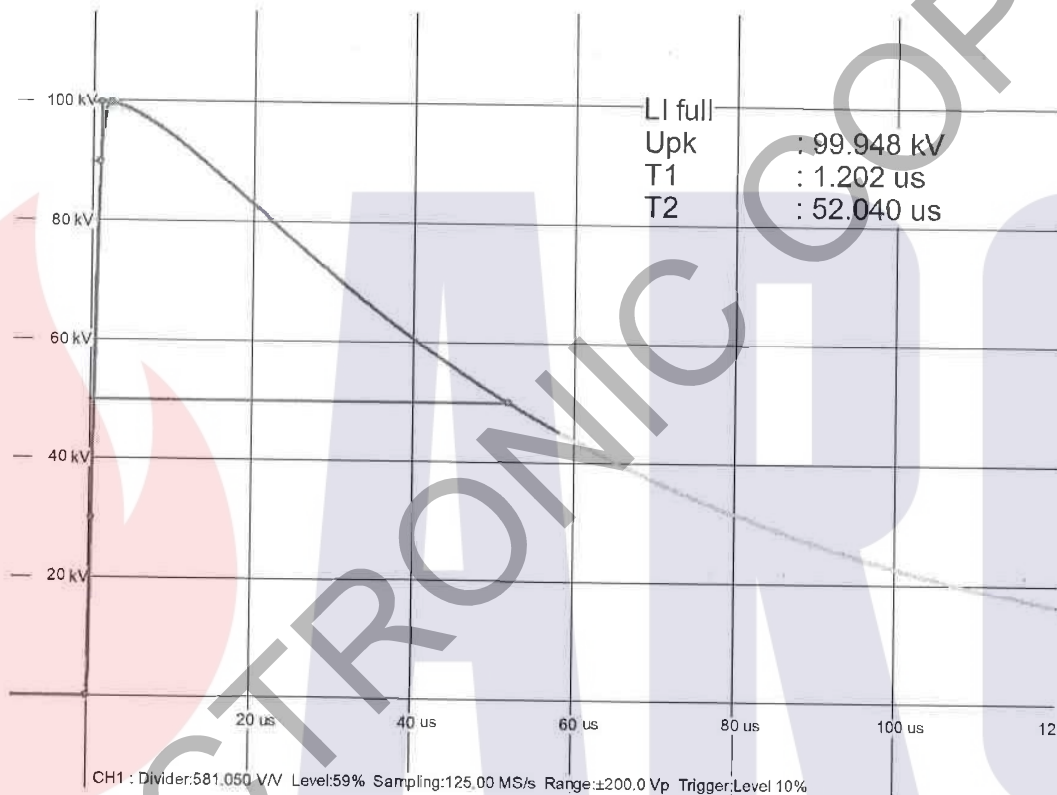
ULR No.: TC538923000012464F

SHEET 3 of 6

DATE OF ISSUE : 26/05/2023

LIGHTNING IMPULSE VOLTAGE WITHSTAND TEST

CALIBRATION PULSE



TC 3460798

P. Patel
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TEST REPORT NO.: RP-2324-006021

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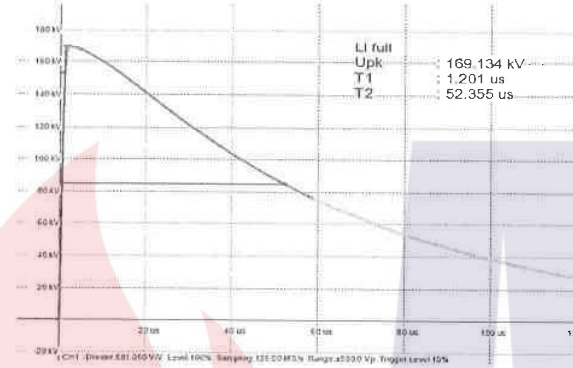
SHEET 4 of 6

DATE OF ISSUE : 26/05/2023

LIGHTNING IMPULSE VOLTAGE WITHSTAND TEST

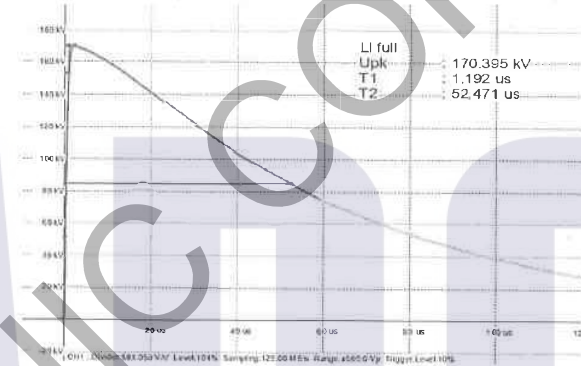
FIRST SHOT

CH: 1



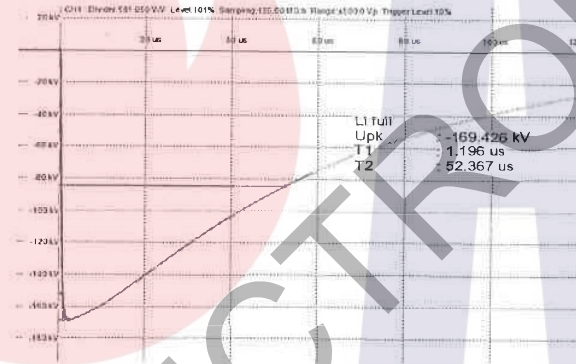
LAST SHOT

CH: 1



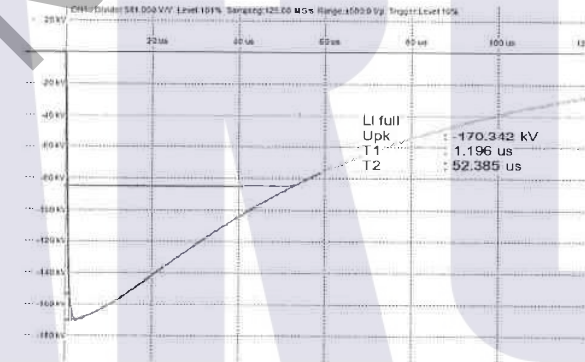
FIRST SHOT

CH: 1



LAST SHOT

CH: 1



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TEST REPORT No.: RP-2324-006021

SHEET No.: 5 OF 6

ULR No.: TC538923000012464F

DATE OF ISSUE : 26/05/2023

Atmospheric condition : Dry bulb Temperature : 31.0 °C
Wet bulb Temperature : 27.0 °C
Atmospheric Pressure : 758 mm of Hg.

| Sr. No. | Test Conducted (CL. No. & IEC) | Test Requirement | Obtained Results | Obtained Results |
|--|---|---|------------------|------------------|
| 2. | Dry Power Frequency Voltage Withstand Test. (As per customer's requirement & generally test procedure was followed as per Cl. No. 6.3 of IEC:60060-1-2010) | The test voltage of 100 kVrms corrected to reference atmospheric condition was applied between the H.V. terminal & earth (Across test length of 15 feet) for one minute duration. | Withstood | Conforms |
| 3. | Wet Power Frequency Voltage Withstand Test. (As per customer's requirement & generally test procedure was followed as per Cl. No. 4.4 of IEC:60060-1-2010) | The test voltage of 100 kVrms corrected to reference atmospheric condition was applied between the H.V. terminal & earth (Across test length of 15 feet) for one minute duration under artificial rainfall condition. | Withstood | Conforms |
| <p><i>Peppal</i> CHECKED BY</p> | | | | |



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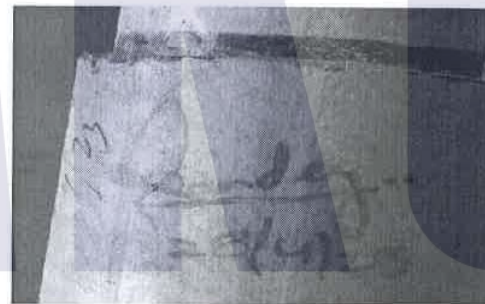
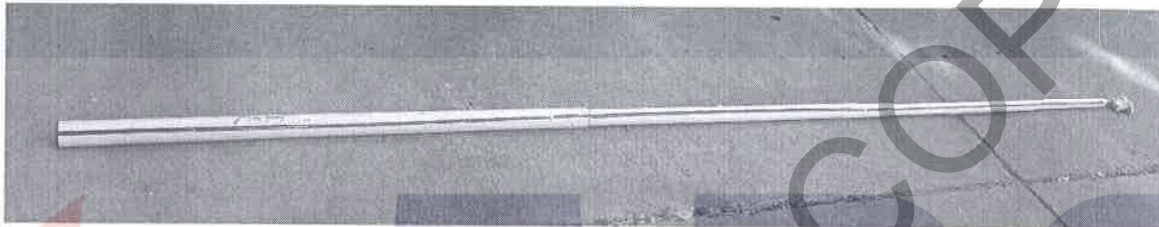
TEST REPORT No.: RP-2324-006021

SHEET No.: 6 OF 6

ULR No.: TC538923000012464F

DATE OF ISSUE : 26/05/2023

PHOTOGRAPHS OF TEST SAMPLE



TC 3460797

Prasad
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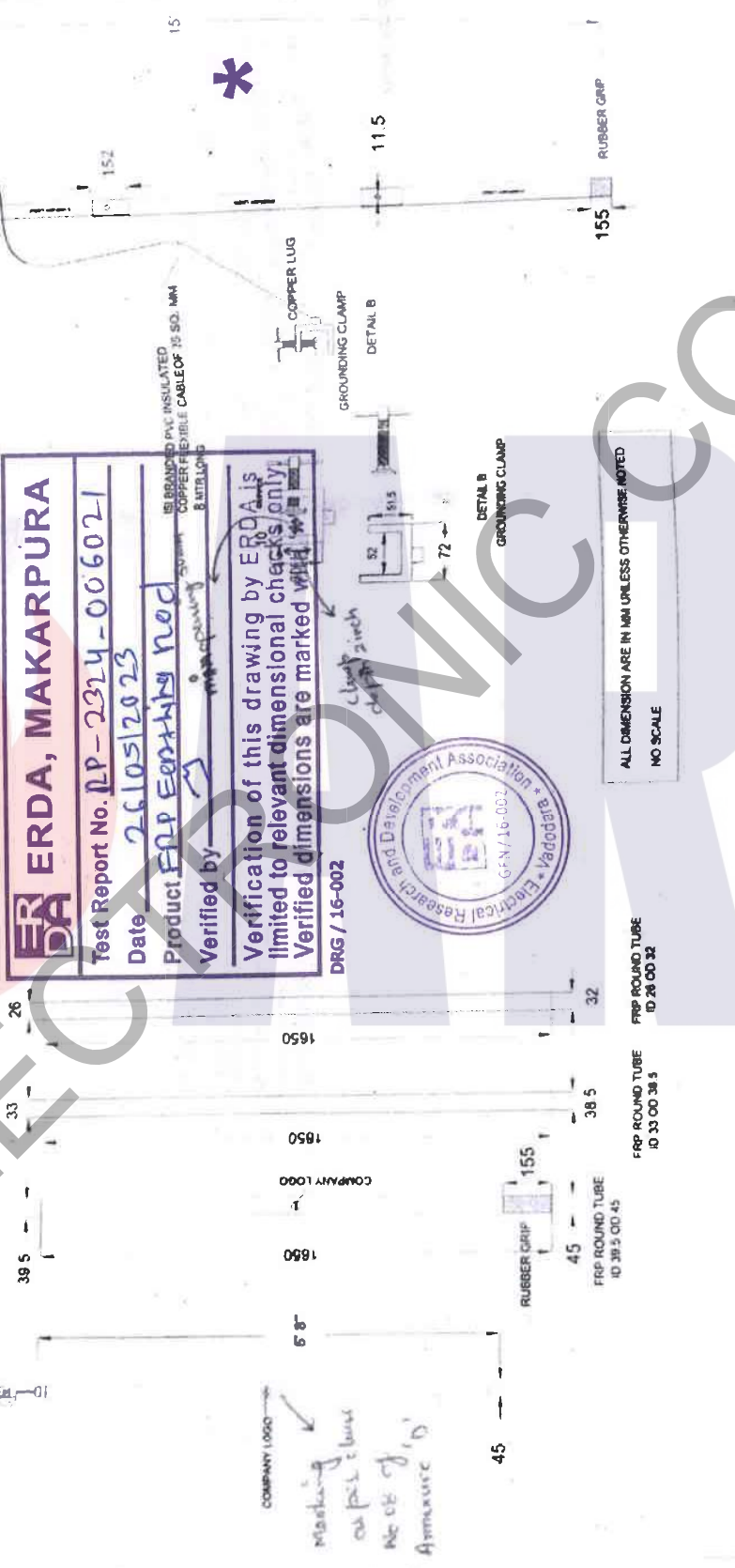


***** End of Test Report *****

Pandey
Sr. Electrical Engineer (Elect)
O/o Chief Engineer (MM)
HPSEB Ltd, Vidyat Bawad,
Shimla - 171004

Sanjay Singh
Superintending Engineer (Contract)
O/o Chief Engineer (MM)
HPSEB Ltd, Vidyat Bawad,
Shimla-171004

Sanjay Singh
HPSEB Ltd, Vidyat Bawad,
Shimla-171004



ERDA, MAKARPURA
Test Report No. RP-2324-006021
Date 26.10.2023
Product FRP Discharge rod
Verified by Sanjay Singh
Verification of this drawing by ERDA is limited to relevant dimensional checks only. Verified dimensions are marked with ✓.



ALL DIMENSION ARE IN MM UNLESS OTHERWISE NOTED
NO SCALE

MAJOR COMPONENTS

| SL. NO. | DESCRIPTION | QTY | UOM |
|---------|---|-----|-----|
| 1 | FRP ROUND TUBE ID 38.5 OD 45 L - 1650 MM | 01 | NOS |
| 2 | FRP ROUND TUBE ID 33 OD 38.5 L - 1650 MM | 01 | NOS |
| 3 | FRP ROUND TUBE ID 26 OD 32 FOM FILLED L - 1650 MM | 01 | NOS |
| 4 | RUBBER GRIP | 01 | NOS |
| 5 | GROUNDING CLAMP WITH GRIPPER | 01 | NOS |
| 6 | CONDUCTING CLAMP | 01 | NOS |
| 7 | 16-BRANDED 3C COPPER FLEXIBLE CABLE L - 8 MTR | 01 | NOS |

ARC
ARC INSULATION & INSULATORS PVT. LTD.
VILL - RAMDEVPUR, P.O - BAWALI, DIST - 24 PGS. (S)
DRAWN BY: SUBHADIP
CHECKED BY: ANUP
APPROVED BY: MANISH
DATE: 15.06.2022
REV - 00 SHEET - 01
CLIENT - HIMACHAL PRADESH STATE ELECTRICITY BOARD
CONTRACTOR -
TITLE - FRP DISCHARGE ROD
DRG. NO. - ARC/FRP/22-23/06