

**Laboratory** Global Power Research Institute (A Unit of Saravana Global Energy Limited), Pethunayakankuppam, Kurinjiyadi Post, Dist. Cuddalore, Tamil Nadu

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** TC-7434

Page 1 of 7

**Validity** 22.06.2018 to 21.06.2020

Last Amended on --

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|-----|----------------------------|-------------------------|---|--|
|-----|----------------------------|-------------------------|---|--|

**ELECTRICAL TESTING**

| I. | <b>TRANSMISSION LINE EQUIPMENT AND ACCESSORIES</b>  |   |  |                      |
|----|---|---|--|----------------------|
| 1. | <b>Insulators and Insulator Strings Single/Twin/Triple/Quad - Tension or Suspension Type, Composite Insulators, Hollow Insulators</b> | Power Frequency Voltage Withstand & Flashover (Dry) | IS 2071-1<br>IS 2071-2<br>IS 2544<br>IS 1445<br>IS 5300<br>IS 2099<br>IS 9431<br>IS 4318<br>IEC 60060-1<br>IEC 60060-2<br>IEC 60168  | 5 kVrms to 800 kVrms |
|    |   | Power Frequency Voltage Withstand & Flashover (Wet) | IS 731<br>IS 2544<br>IS 2071-1<br>IS 2071-2<br>IS 2071-3<br>IS 1445<br>IS 5300<br>IS 2099<br>IS 9431<br>IS 4318<br>IEC 60168<br>IEC 60383 -1<br>IEC 60383 -2<br>IEC 60060-1<br>IEC 60060-2<br>IEC 61109<br>IEC 62217 | 5 kVrms to 800 kVrms |

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**Page 2 of 7**

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|-----|----------------------------|--|---|--|
|     |                            | Switching Impulse Voltage Withstand (Dry/Wet)  | IS 8269   | 50 kVp to 1200 kVp                     |
|     |                            | Lightning Impulse Withstand & Flashover (Dry)  | IS 731<br>IS 2544<br>IS 2071-1<br>IS 2071-2<br>IS 2099<br>IS 9431<br>IS 4318<br>IEC 60168<br>IEC 60383 -1<br>IEC 60383 -2<br>IEC 60060-1<br>IEC 60060-2<br>IEC 61109                                    | 50 kVp to 2000kVp                      |
|     |                            | RIV Test                                       | IS 8263<br>IEC 60383 -1<br>IEC 60383 -2<br>IEC 60437<br>Power grid (Annexure-A Section-III (Volume-IIB) Page 22) & NTPC Specification (Spec No.CS-9560-572-2,Part-II Section-VI, Page EO-6/8, Clause 4) | 5 kVrms to 420 KVrms                   |
|     |                            | Visible Corona Test/<br>Visible Discharge Test | IS 731<br>IS 2544   | 5 kVrms to 420 KVrms                   |
|     |                            | Corona Inception /Extinction                   | Power grid (Annexure-A Section-III(Volume-IIB) Page 22) & NTPC Specification (Spec No.CS-9560-572-2,Part-II Section-VI, Page EO-6/8, Clause 4)  | 5 kVrms to 420 KVrms                   |

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**Page 3 of 7**

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|     |   | Voltage distribution (Dry)    | Power Grid Specification C/ENG/SPEC/SE Revision No. 07  | 5 kVrms to 800 KVrms                   |
|     |   | Puncture Test                 | IS 731<br>IS 2544<br>IEC 60383 -1   | 5 kVrms to 250 kVrms                   |
|     |   | Electrical Routine Test       | IS 5621<br>IEC 62155  | 5 kVrms to 100 kVrms                   |
| 2.  | <b>Metal Fittings for Overhead Lines</b>                      | RIV Test                      | IS 8263<br>IEC 61284<br>IEC 60437   | 5 kVrms to 420 KVrms                   |
|     |   | Corona Inception / Extinction | IEC 61284   | 5 kVrms to 420 KVrms                   |
| 3.  | <b>Aluminum Conductors for Overhead Transmission Purposes</b> | RIV Test                      | IS 398 (Part 5)<br>IS 8263<br>Power Grid (Annexure-A Section-III(Volume-IIB) Page 22) & NTPC Specification (Spec No.CS-9560-572-2,Part-II Section-VI, Page EO-5/8 & 7/8, Clause 3 & 5)<br>IEC 60437 | 5 kVrms to 420 KVrms                   |
|     |   | Corona Inception /Extinction  | IS 398 - 5<br>Power Grid (Annexure-A Section-III(Volume-IIB) Page 22)<br>NTPC Specification (Spec No.CS-9560-572-2,Part-II Section-VI, Page EO-6/8 & 7/8, Clause 4 & 5)<br>IEC 60437                | 5 kVrms to 420 KVrms                   |

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**Page 4 of 7**

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| 4.  | <b>Isolators &amp; Air Break Switches</b> | Power Frequency Voltage Withstand (Dry/Wet) / Applied Voltage   | IS 9920-2<br>IS 9920-4<br>IS 13118<br>IS 9921-2<br>IS 9921-4<br>IS 2071-1<br>IS 2071-2<br>IEC 62271-1<br>IEC 62271-100<br>IEC 62271-101<br>IEC 62271-102<br>IEC 62271-200<br>IEC 60060-1<br>IEC 60060-2<br>IEC 60214-1 | 5 kVrms to 800 kVrms                   |
|     |   | Lightning Impulse Withstand (Dry) / Full Wave Lightning Impulse | IS 9920-2<br>IS 9920-4<br>IS 13118<br>IS 9921-2<br>IS 9921-4<br>IS 2071-1<br>IS 2071-2<br>IEC 62271-1<br>IEC 62271-100<br>IEC 62271-101<br>IEC 62271-102<br>IEC 62271-200<br>IEC 60060-1<br>IEC 60060-2<br>IEC 60214-1 | 20 kVp to 2000 kVp                     |
|     |   | Switching Impulse Voltage Withstand (Dry/Wet)                   | IS 2071-1<br>IS 8269<br>IEC 60060-1  | 40 kVp to 1200 kVp                     |

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Page 5 of 7

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|     |                            | Corona Inception/ Extinction                | Power Grid, NTPC and GETCO specification<br>GETCO/E/1,2,4 TS ISO 11/R4  | 5 kVrms to 420 KVrms                   |
|     |                            | RIV Test                                    | IS 8263<br>IEC 60437  | 5 kVrms to 420 kVrms                   |
| 5.  | <b>HV Fuses</b>            | Power Frequency Voltage Withstand (Dry/Wet) | IS 2071-1<br>IS 2071-2<br>IS 9385-1<br>IS 9385-2<br>IS 9385-3<br>IEC 60060-1<br>IEC 60060-2<br>IEC 60282-1<br>IEC 60282-2 | 5 kVrms to 800 kVrms                   |
|     |                            | Lightning Impulse Withstand (Dry)           | IS 2071-1<br>IS 2071-2<br>IS 9385-1<br>IS 9385-2<br>IS 9385-3<br>IEC 60060-1<br>IEC 60060-2<br>IEC 60282-1<br>IEC 60282-2 | 20 kVp to 2000 kVp                     |

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Page 6 of 7

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**MECHANICAL TESTING**

| I. | <b>MECHANICAL PROPERTIES OF METALS</b>  |                                |  |                                   |
|----|---|--------------------------------|--|-----------------------------------|
| 1. | Insulator Disc (Ball & Socket) (Cleaves & Tongue)/ Long Rods insulators, Disc Insulator String, Post Insulators, Hollow Insulators, Composite Insulator, Guy Strain & Shackle Insulator (with and without hardware) | Visual Examination             | IS 731<br>IS 2544<br>IS 5621<br>IS 5300<br>IS 1445<br>IS 4318<br>IEC 60383-1<br>IEC 60168<br>IEC 62155<br>IEC 61109<br>IEC 62217 | Qualitative                       |
|    |   | Dimensions                     | IS 731<br>IS 2544<br>IS 5621<br>IS 5300<br>IS 1445<br>IS 4318<br>IEC 60383 -1<br>IEC 60168<br>IEC 62155                          | 0.02 mm to 250 mm<br>10 mm to 5 m |
|    |   | Thermal Mechanical Performance | IS 731<br>IEC 60575<br>IEC 60383-1   | 20 kN to 200 kN                   |
|    |   | Temperature Cycle              | IS 731<br>IS 2544<br>IS 5300<br>IS 1445<br>IEC 60383-1<br>IEC 60168  | 4 °C to 85 °C                     |

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|-----------|---------------------------------------|--|---|--|
|           |                                       | Electro Mechanical Failing Load (Type B Insulator) | IS 731<br>IEC 60383-1   | 20 kN to 980 kN with<br>5 kVrms to 60kVrms |
|           |                                       | Porosity Test                                      | IS 731<br>IS 2544<br>IS 5300<br>IS 1445<br>IEC 60383<br>IEC 60168 | Qualitative                                |
|           |                                       | Galvanizing Test (Uniformity of Zinc Coating)      | IS 731<br>IS 2544<br>IS 2633<br>IEC 60383-1<br>IEC 60168          | Qualitative                                |
|           |                                       | Mechanical Performance (Disc)                      | IS 731  | 20 kN to 980 kN                            |
|           |                                       | Mechanical Failing Load                            | IS 731<br>IS 1445<br>IEC 60383-1                                  | 20 kN to 980 kN                            |
|           |                                       | Tensile Test                                       | IS 2544/IS 5300<br>IEC 60383-1<br>IEC 60168                       | 20 kN to 980 kN                            |
|           |                                       | Compression Test                                   | IS 2544<br>IEC 60168  | 20 kN to 980 kN                            |
|           |                                       | Torsion Test                                       | IS 2544<br>IEC 60168  | 2 kNm to 20 kNm                            |
|           |                                       | Bending Test                                       | IS 2544<br>IEC 60168  | 3 kN to 20 kN<br>20 kN to 100 kN           |
| <b>2.</b> | <b>Hard Ware &amp; Metal Fittings</b> | Visual Examination                                 | IS 2486-1   | Qualitative                                |
|           |                                       | Dimensions   | IS 2486-1   | 0.02 mm to 250 mm<br>10 mm to 5 m          |
|           |                                       | Mechanical Strength                                | IS 2486-1   | 20 kN to 980 kN                            |