

CPRI

## TEST REPORT



Central Power Research Institute  
(A Govt. of India Society)  
Medipally P.O., Warangal Road,  
Hyderabad – 500 098 (INDIA)

# CENTRAL POWER RESEARCH INSTITUTE



CPRI

## TEST REPORT

**Test Report Number** : CPRIHYDUHV19T0224 **Date: 24 September 2019**

**Name & Address of the Customer** : M/s. CG Power and Industrial Solutions Limited.,  
D-2, MIDC, Waluj  
**Aurangabad - 431136, Maharashtra State, India**

**Name and Address of the Manufacturer** : M/s. CG Power and Industrial Solutions Limited.,  
D-2, MIDC, Waluj  
**Aurangabad - 431136, Maharashtra State, India**

**Particulars of sample tested** : Current Transformer with composite insulator

**Condition of the sample on receipt** : CGC – CI 145

**Type** : Nil

**Description of test sample** : 145 kV, 300 / 600 / 1200 / 1-1-1-1 A, oil filled hermetically sealed Current Transformer

**Serial Number** : 185553

**Number of samples tested** : One

**Date(s) of test(s)** : 23 September 2019

**CPRI Sample Code no(s)** : UHV19S0221

**Particulars of test conducted** : Electro Magnetic Compatibility (RIV) test

**Test in accordance with Standard/ Specification** : IEC 61869-1 : 2007 and IEC 61869 - 2 : 2012

**Sampling plan** : Not applicable

**Customer's requirement** : Nil

**Deviations, if any** : Nil

**Name of the witnessing persons** : Mr. Pradip Shinde

**Customer representatives** :

**Other than customer's representatives** : Nil

**Test subcontracted with address of the laboratory** : None

**Documents constituting this report (in words)**

**Number of Sheets(s)** : Four

**Number of Oscillogram(s)** : Nil

**Number of Graph(s)** : Nil

**Number of Photograph(s)** : Nil

**Number of Test circuit diagram(s)** : One

**Number of Drawing(s)** : Three

  
(K. A. Aravind)  
Test Engineer



  
(Dr. Pradeep M Nirgude)  
Head of Division  
Approved by

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT



Test Report Number. CPRIHYDUHV19T0224

Date: 24 September 2019

**CPRI**

### SUMMARY OF TESTS CONDUCTED

1. Tests conducted : Type test
2. Rating for which tested : 145 kV
3. Schedule of test results

| Test No. | Tests conducted                           | Clause Nos.                     | Reference              |
|----------|-------------------------------------------|---------------------------------|------------------------|
| 1.       | Electro Magnetic Compatibility (RIV) test | 7.2.5.1 of IEC 61869 - 2 : 2012 | Refer Sheet No. 3 of 4 |

4. Oscillogram Numbers : Nil
5. Graph Numbers : Nil
6. Photograph Numbers : Nil
7. Test Circuit Diagram Numbers : CPRIHYDUHV19T0224TCD01
8. Drawing Numbers : Refer Sheet No.2 of 4

### Drawing Numbers

The manufacturer has guaranteed that the sample submitted for the test(s) has been manufactured in accordance with the following drawings:

| Sl. No. | Drawing Number        | Sheet No. | Rev. No |
|---------|-----------------------|-----------|---------|
| 1.      | 411950261 CT1 GA / R1 | ----      | 1       |
| 2.      | 411950261 CT1 RS / R0 | ----      | 0       |
| 3.      | 411950261 CT1 SB / R0 | ----      | 0       |

Verification of the drawings by CPRI is limited to dimensional check only wherever possible.

  
(K. A. Aravind)  
Test Engineer

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT



Test Report Number. CPRIHYDUHV19T0224

Date: 24 September 2019

## TEST RESULTS

### Test: Electro Magnetic Compatibility (RIV) test

#### Test condition:

Under dry condition

#### Ambient conditions:

Dry bulb temperature

29 °C

Wet bulb temperature

23 °C

Atmospheric pressure

96.13 kPa

#### Applicable additional technical specification:

CISPR 18 – 2: 2017

Detector: Quasi Peak Measuring frequency:

1 MHz

Ambient RIV level across 300  $\Omega$  :

16  $\mu$ V

The sample was pre-stressed at 125.5 kVrms for 30 s and reduced to measuring voltage 92 kVrms within 10 s and maintained at this test voltage for 30 s before measurement

| Test arrangement                        |                                                                 | Specified test voltage (kV <sub>rms</sub> ) | Measured RIV level across 300 $\Omega$ ( $\mu$ V) |
|-----------------------------------------|-----------------------------------------------------------------|---------------------------------------------|---------------------------------------------------|
| HV AC applied to                        | Earthed                                                         |                                             |                                                   |
| Shorted primary terminals of CT (P1+P2) | All secondary terminals and C <sub>x</sub> along with base tank | 92                                          | 31                                                |

**Conclusion:** The sample tested complies with the requirement of Clause 7.2.5.1 of IEC 61869 - 2: 2012 for the tests conducted.

  
(K. A. Aravind)  
Test Engineer

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## TEST REPORT



**CPRI**

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Date: 24 September 2019

### NOTE

- a) The Test results relate only to the sample(s) tested.
- b) Publication or reproduction of this Test Report /Test Certificate in any form other than by complete set of the whole Test Report /Test Certificate and in the language written is not permitted without the written consent of CPRI.
- c) Any Corrections/erasure invalidates the Test Report/Test Certificate
- d) NABL has Accredited this laboratory as per ISO/IEC17025:2017, vide certificate no.TC-6198 for the tests carried out.
- e) Any anomaly/discrepancy in the Test Report / Test Certificate should be brought to the notice of CPRI within 45 days from the date of issue.

  
(K. A. Aravind)  
Test Engineer

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT



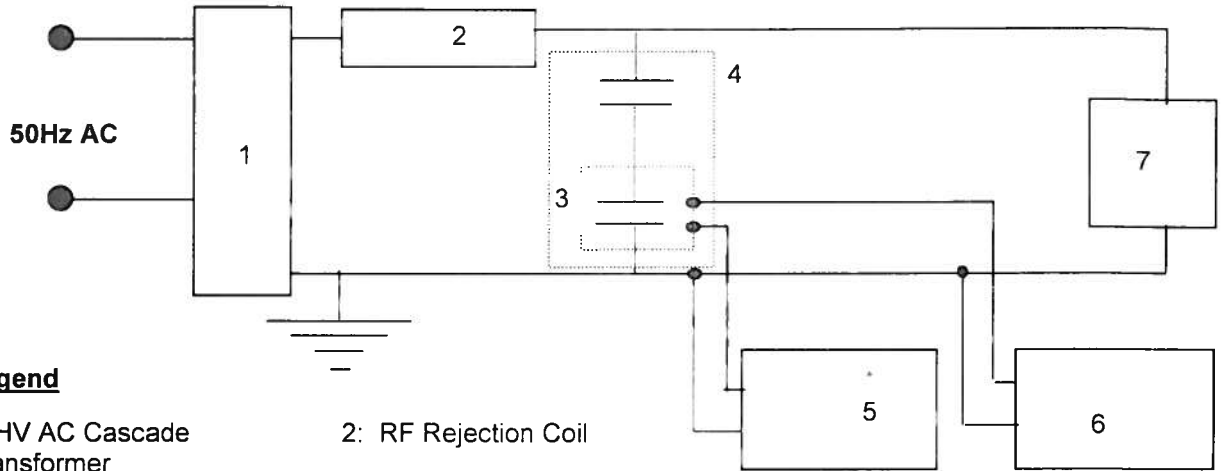
**CPRI**

Test Report Number. CPRIHYDUHV19T0224

Date: 24 September 2019

### TEST CIRCUIT DIAGRAM

Test: Electro Magnetic Compatibility (RIV) test

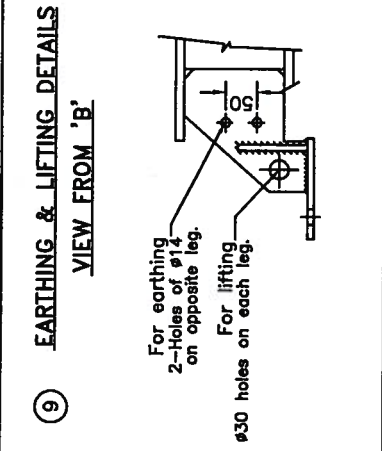
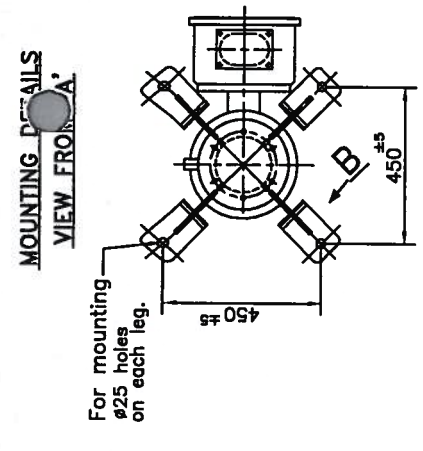
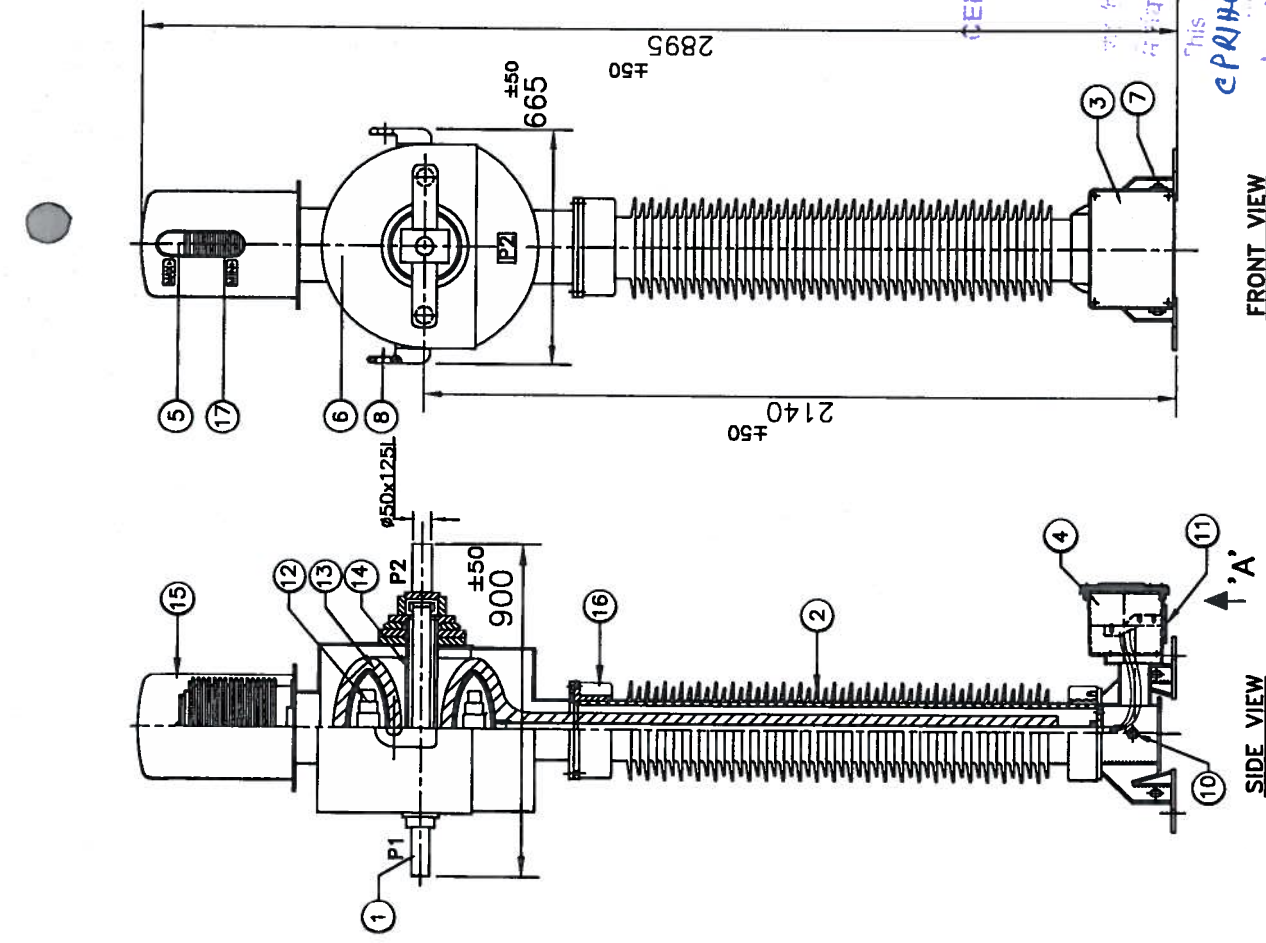


#### Legend

- |                              |                             |
|------------------------------|-----------------------------|
| 1: HV AC Cascade Transformer | 2: RF Rejection Coil        |
| 3: PD / RIV Impedance Box    | 4: AC Voltage Divider       |
| 5: Peak Voltmeter            | 6: PD / RIV Processing unit |
| 7: Test Sample               |                             |

Test Circuit Diagram No. CPRIHYDUHV19T0224TCD01

  
(K. A. Aravind)  
Test Engineer



| BILL OF MATERIAL |      |                             |
|------------------|------|-----------------------------|
| NO.              | QTY. | DESCRIPTION                 |
| 1                | 2    | PRIMARY TERMINAL            |
| 2                | 1    | COMPOSITE INSULATOR         |
| 3                | 1    | GRAY COLOUR                 |
| 4                | 1    | RATING & SCHEMATIC DIAGRAM  |
| 5                | 1    | SECONDARY TERMINAL BOX      |
| 6                | 1    | BELLOW LEVEL INDICATOR      |
| 7                | 1    | TANK                        |
| 8                | 2    | LIFTING LUG                 |
| 9                | 2    | EARTHING HOLE               |
| 10               | 1    | OIL FILLING /SAMPLING VALVE |
| 11               | 1    | REMOVABLE CABLE GLAND PLATE |
| 12               | 5    | CORE                        |
| 13               | 5    | SECONDARY WINDING           |
| 14               | 1    | PRIMARY WINDING             |
| 15               | 1    | HOOD                        |
| 16               | 2    | INSULATOR FLANGE            |
| 17               | 1    | BELLOW                      |

| MATERIAL                     |
|------------------------------|
| ALUMINIUM                    |
| COMPOSITE                    |
| WIRE-JUNKS SPMR ELECTRIC CO. |
| DWG.NO.411850281 CT1 RS      |
| DWG.NO.411850281 CT1 SB      |
| ACRYLIC                      |
| ALUMINIUM                    |
| MILD STEEL                   |
| ALUMINIUM                    |
| ---                          |
| STEEL PLATED                 |
| ALUMINIUM                    |
| NANO/CRGO                    |
| COPPER                       |
| ALUMINIUM                    |
| ALUMINIUM                    |
| ALUMINIUM                    |
| STAINLESS STEEL              |

- NOTE:-
- TANK FINISHING : POLYURETHANE PAINT SHADE-RAL 9002
  - OIL VOLUME : 125 LITRE ±10%
  - TOTAL WEIGHT : 450 KG. ±10%
  - COMPOSITE INSULATOR CREEPAGE DISTANCE : 3625 mm
  - DEGREE OF PROTECTION FOR SECONDARY TERMINAL BOX: IP55
  - SUITABLE FOR TRANSPORTATION : HORIZONTAL

|        |  |  |  |  |  |
|--------|--|--|--|--|--|
| R4     |  |  |  |  |  |
| R3     |  |  |  |  |  |
| R2     |  |  |  |  |  |
| R1     |  |  |  |  |  |
| R0     |  |  |  |  |  |
| SR.NO  |  |  |  |  |  |
| CLIENT |  |  |  |  |  |

|                    |       |         |          |
|--------------------|-------|---------|----------|
| BOM UPDATED        | SSM   | SDS     | 29.03.19 |
| INITIAL SUBMISSION | PSC   | SDS     | 12.03.19 |
| DESCRIPTION        | DRAWN | CHECKED | DATE     |

NTPC LIMITED  
(A GOVERNMENT OF INDIA ENTERPRISE)

SIEMENS LIMITED  
MUMBAI

PROJECT  
RENOVATION OF 400/132 KV SWITCHYARD  
AT NTPC VIDHYACHAL STPS

|        |                                     |          |      |            |         |
|--------|-------------------------------------|----------|------|------------|---------|
| LINE-1 | GENERAL ARRANGEMENT DRAWING         | APPROVED | NAME | DATE       | SIZE:A3 |
| LINE-2 | RA 12 H CEMENT TANKS                | DRAWN    | PSC  |            | SHEET:- |
| LINE-3 | CGC-C1 145                          | CHECKED  | SSM  | 12.03.2019 | SH.NO   |
|        | DRAWING NO. : 411950281 CT1 GA / R1 | APPROVED | SSS  |            | REVISIT |

|         |       |
|---------|-------|
| SIEMENS | REV-1 |
|---------|-------|

परिक्षण इंजीनियर TEST ENGINEER  
केन्द्रीय विद्युत अनुसंधान संस्थान  
CENTRAL POWER RESEARCH INSTITUTE  
हैदराबाद HYDERABAD.

शुद्धि

परिक्षण परीक्षण दस्तावेज में  
नियमित है

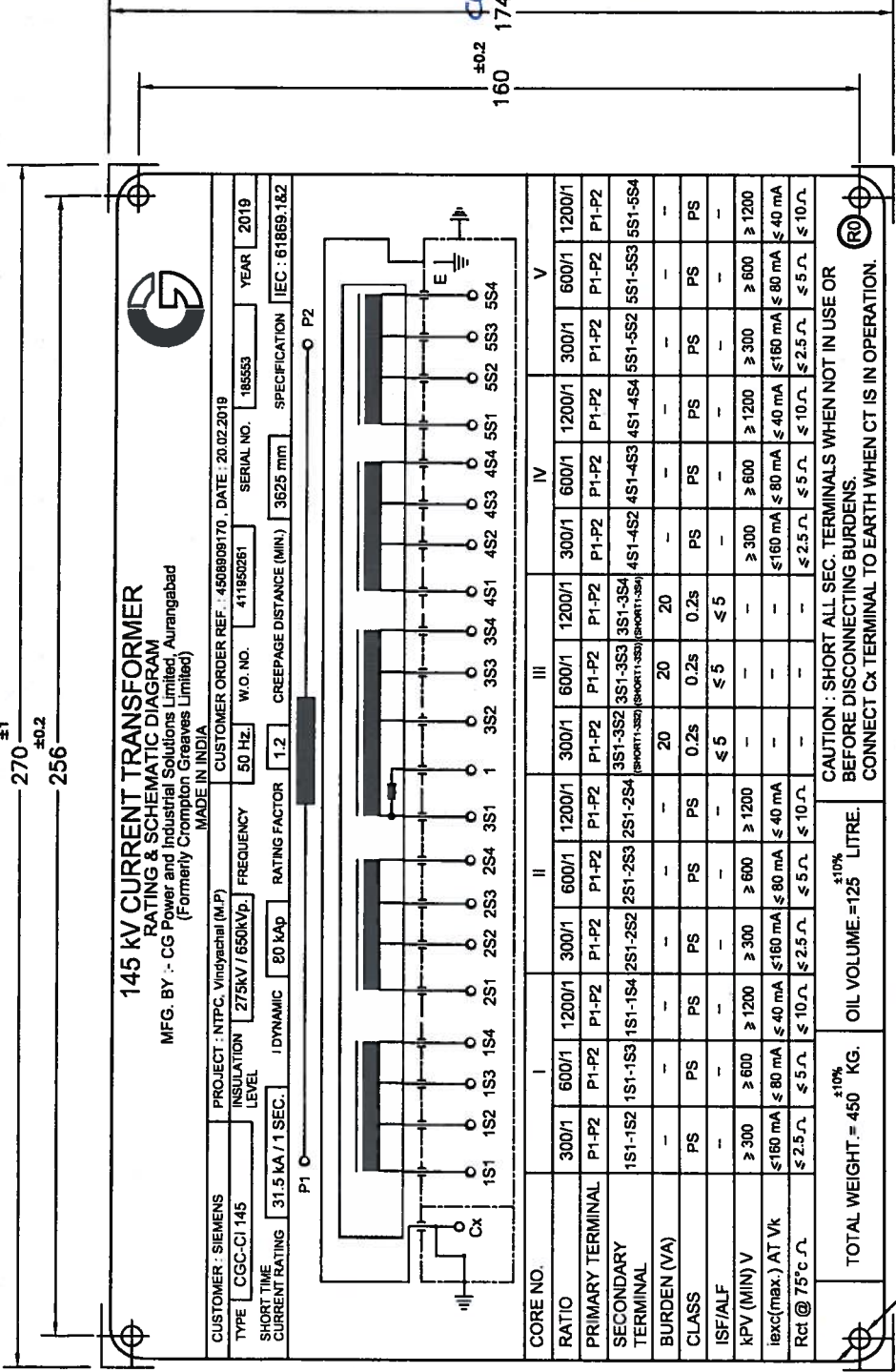
This drawing pertains to Test report No  
CPRI/Hyderabad/19/70224 dated 24 September 2019  
'इस चित्र का साक्ष्यबद्ध नमूनापूर्ण आभावों की  
गोच तक ही सीमित है'

Manufacturing only

CG Power and Industrial Solutions Limited, Aaregahad  
(Formerly Comptex Greenies Limited)

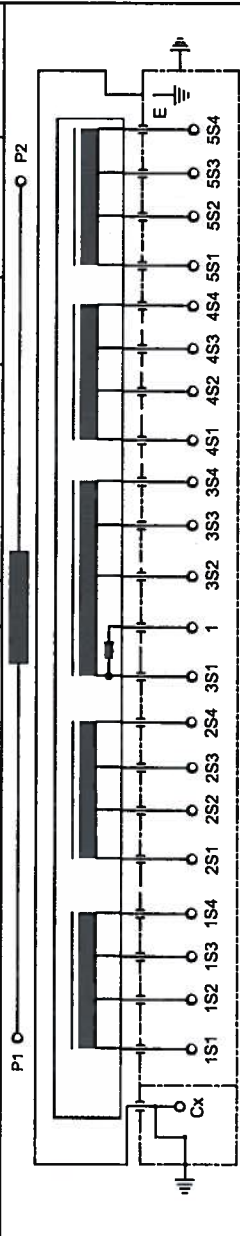
NOTE : PLEASE REFER INSTRUCTION MANUAL FOR HANDLING & TRANSPORTATION OF CT.

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145 kV CURRENT TRANSFORMER  
RATING & SCHEMATIC DIAGRAM  
MFG. BY :- CG Power and Industrial Solutions Limited, Aurangabad  
(Formerly Crompton Greaves Limited)  
MADE IN INDIA

|                                              |                                   |                                   |                                    |
|----------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| CUSTOMER : SIEMENS                           | PROJECT : NTPC, Vidhyachal (M.P.) | CUSTOMER ORDER REF. : 45080809170 | DATE : 20.02.2019                  |
| TYPE : CGC-CI 145                            | INSULATION : 275kV / 650kVp       | SERIAL NO. : 185553               | YEAR : 2019                        |
| SHORT TIME CURRENT RATING : 31.5 kA / 1 SEC. | DYNAMIC : 80 kA                   | FREQUENCY : 50 Hz                 | W.O. NO. : 411950261               |
|                                              | RATING FACTOR : 1.2               | CREEPAGE DISTANCE (MIN) : 3625 mm | SPECIFICATION : IEC : 61869-1:2012 |



| CORE NO.                                  | I       | II      | III     | IV      | V       |
|-------------------------------------------|---------|---------|---------|---------|---------|
| RATIO                                     | 300/1   | 600/1   | 1200/1  | 300/1   | 600/1   |
| PRIMARY TERMINAL                          | P1-P2   | P1-P2   | P1-P2   | P1-P2   | P1-P2   |
| SECONDARY TERMINAL                        | 1S1-1S2 | 1S1-1S3 | 1S1-1S4 | 1S1-1S5 | 1S1-1S6 |
| BURDEN (VA)                               | PS      | PS      | PS      | PS      | PS      |
| CLASS                                     | PS      | PS      | PS      | PS      | PS      |
| IS/ALF                                    | PS      | PS      | PS      | PS      | PS      |
| KV (MIN)                                  | PS      | PS      | PS      | PS      | PS      |
| I <sub>ext</sub> (max.) AT V <sub>k</sub> | PS      | PS      | PS      | PS      | PS      |
| R <sub>ct</sub> @ 75°C                    | PS      | PS      | PS      | PS      | PS      |

CAUTION : SHORT ALL SEC. TERMINALS WHEN NOT IN USE OR BEFORE DISCONNECTING BURDENS.  
CONNECT Cx TERMINAL TO EARTH WHEN CT IS IN OPERATION.

TOTAL WEIGHT = 450 KG. ±10%  
OIL VOLUME = 125 LITRE. ±10%

परीक्षण इंजीनियर TEST ENGINEER  
केन्द्रीय विद्युत अनुसंधान संस्थान  
CENTRAL POWER RESEARCH INSTITUTE  
हैदराबाद HYDERABAD.

यह चित्र परीक्षण दस्तवज से संबंधित है  
This drawing pertains to Test report No  
CGP/145/DOH/1970.224 dt. 24 September 2019  
इस चित्र का सांख्यिकीय महत्वपूर्ण आगमन को  
जांच नक़्क़ी सिद्धि है  
Attestation of drawing is limited to  
checking of important dimensions only

| SR NO  | DESCRIPTION | DRAWN | CHECKED | DATE |
|--------|-------------|-------|---------|------|
| R3     |             |       |         |      |
| R2     |             |       |         |      |
| R1     |             |       |         |      |
| RO     |             |       |         |      |
| SR NO  |             |       |         |      |
| CLIENT |             |       |         |      |

NTPC LIMITED  
(A GOVERNMENT OF INDIA ENTERPRISE)

SIEMENS LIMITED  
MUMBAI

RENOVATION OF 400/132 KV SWITCHYARD  
AT NTPC VIDHYACHAL STPS

LINE-1  
LINE-2  
LINE-3  
CGC-CI 145

|                                                                   |          |  |      |            |          |        |
|-------------------------------------------------------------------|----------|--|------|------------|----------|--------|
| <div>DRAWING NO. : 411950261 C11 RS / RO</div> <div>SIEMENS</div> | APPROVED |  | NAME | DATE       | SHEET-   | SIZE:A |
|                                                                   | DRAWN    |  | PG   |            | SHO      |        |
|                                                                   | CHECKED  |  | SSN  |            | REVISION |        |
|                                                                   | APPROVED |  | SOS  | 12.03.2016 | REV-0    |        |
|                                                                   |          |  |      |            |          |        |

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