



केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो सर सी. वी. रामन रोड़, सदाशिवनगर डाक घर, पो. बा. सं. 8066, बेंगलूर - 560 080

CENTRAL POWER RESEARCH INSTITUTE

(A Govt of India Society under Min. of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India

वेबसाइट/website : <http://www.cpri.in>

BY SPEED POST

E-mail : mallik@cpri.in

DIAGNOSTIC, CABLES & CAPACITORS DIVISION CABLES LAB

2/1/DCCD/CAB/2015-16

Date: 01.07.2015

M/s. KEC INTERNATIONAL LTD., (Cables Division)
Plot No. 803, Samlaya Savli Road, Village-Godampura
Taluka-Savli, Vadodara, Gujarat-391520.

Dear Sir,

Ref: Customer request dated 02.03.2015
Sub: Type test on 3X 240 sq.mm 33 kV Cable

With reference to the above, type test on 3X 240 sq.mm 19/33 kV XLPE Cable as per BS 6622-2007 has been completed and our Test report No. DCCD-14521 dated 26.06.2015 is enclosed.

In order to prevent tampering of test report, CPRI has introduced hologram on the first page of the test report with effect from 01.10.2007.

Any discrepancy in these test reports may be brought to notice within forty five days from the date of issue of test reports. Please acknowledge the receipt of the test report.

Thanking you

Yours faithfully


(K. Mallikarjunappa)
Joint Director

CPRI

TEST REPORT



Central Power Research Institute

(A Govt. of India Society,)

P.B. No.8066, Sadashivanagar Post Office

Prof. Sir.C.V. Raman Road,

Bangalore - 560 080(INDIA)

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TEST REPORT

Test Report Number : DCCD-14521 **Dated** : 26.06.2015

Name & Address of the Customer : M/s. KEC INTERNATIONAL LTD., (Cables Division)
Plot No. 803, Samlaya Savli Road, Village-Godampura
Taluka-Savli, Vadodara, Gujarat-391520.

Name & Address of the Manufacturer : M/s. KEC INTERNATIONAL LTD., (Cables Division)
Plot No. 803, Samlaya Savli Road, Village-Godampura
Taluka-Savli, Vadodara, Gujarat-391520

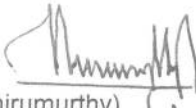
Particulars of sample tested : 3 X 240 mm² 19/33 kV XLPE Armoured Cable
Condition of the sample on receipt : New.
Type : 2XWY(P)
Designation : Conductor Material : Copper
No. of cores : Three
Size : 240 mm²
Insulation: XLPE
Armour : Galvanised steel Round Wire
Outer sheath : PVC
Voltage Rating : 19/33 kV
Embossing : KEC INTL LTD (RPG CABLES) ELECTRIC
CABLE 33000 V BS 6622 3X 240 2014

Serial Number : NIL
Number of Samples tested : One
Date(s) of Test(s) : 02.03.2015 to 17.06.2015
CPRI Sample Code no(s) : DCCDCAB14S0226

Particulars of test conducted : Type Test
Standard /Specification : BS -6622-2007
Sampling plan : Not Applicable
Customer's requirement : Nil
Deviation if any : Nil

Name of the witnessing persons
Customer's representatives : None
Other than customer's representatives : None
Test subcontracted with address of the laboratory : Nil

Documents constituting this report (in words)
Number of sheets : Twelve
Number of oscillogram/s : Twelve (Three pages)
Number of graphs : Nil
Number of photos : Nil
Number of test circuit diagrams : Nil
Number of drawings : One .Drg. No.: KEC/BS 6622


(Thirumurthy)
Test Engineer




(K.Mallikarjunappa)
Joint Director

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I. TESTS ON CONDUCTOR

1. Conductor Resistance Test:

Sl.No	Core Identification	Resistance in Ω/Km at 20°C	
		Observed values	Specified value(Max)
1.	Brown	0.7500	0.0754
2.	Grey	0.7491	
3.	Black	0.7493	

2. Conductor Examination:

Sl.No	Core Identification	Number of Wires in Conductor	
		Observed values	Specified value(Min)
1.	Brown	34	34
2.	Grey	34	
3.	Black	34	

II. TEST ON ARMOUR

1. Test for dimensions:

- a) Type: Galvanised steel Wire
- b) Specified Nominal Diameter : $3.15 \pm 5\%$ mm
- c) Observed Nominal Diameter : 3.075 mm

2. Mass of zinc coating:

- a) Specified value : 206 g/m^2
- b) Observed Value: 300.8 g/m^2

3. Wrapping Test:

- a) Requirement: No breakage of wires shall be observed
- b) Result: No breakage of wires observed.

III. TESTS ON INSULATION:

1(a). Test for Thickness of insulation

Sl.No	Core Identification	Observed Values(mm)		Specified Values(mm)	
		Minimum	Nominal	Minimum	Nominal
1.	Brown	7.893	8.090	7.10	8.0
2.	Grey	7.908	8.102		
3.	Black	7.904	8.134		

1(b). Concentricity of Insulation:

Sl. No.	Core Identification	Concentricity	
		Observed values	Specified value(Max)
1	Brown	0.050	0.15
2	Grey	0.044	
3	Black	0.053	

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1(c). Circularity of Cores:

Sl. No.	Core Identification	Difference between maximum and minimum diameter in mm	
		Observed values	Specified value(Max)
1	Brown	0.27	0.50
2	Grey	0.34	
3	Black	0.40	

2. Tensile Strength and Elongation at Break :

A. Before Ageing:

Sl.No	Core Identification	Observed Values		Specified Values(Min)	
		Tensile Strength N/mm ²	Elongation at Break (%)	Tensile Strength N/mm ²	Elongation at Break (%)
1.	Brown	17.84	545.55	12.5	200
2.	Grey	19.18	569.30		
3.	Black	19.16	564.90		

B. Ageing :

Sample	Temperature	Duration
Dumb- bell Specimens	135 ± 2 ° C	168 Hours

C. After Ageing:

Sl.No	Core Identification	Observed Values	
		Tensile Strength N/mm ²	Elongation at Break (%)
1.	Brown	18.19	502.40
2.	Grey	19.78	579.05
3.	Black	17.05	528.20

D. Variations Observed From Before Ageing Samples:

Sl.No	Core Identification	Observed % Variations		Specified % Variations (Max)	
		Tensile Strength (%)	Elongation at Break (%)	Tensile Strength (%)	Elongation at Break (%)
1.	Brown	1.98	-7.91	± 25	± 25
2.	Grey	3.13	1.71		
3.	Black	-11.01	-6.50		

E. After Completed Cable Ageing: Compatibility Test

(i) Ageing :

Sample	Temperature	Duration
200 mm of completed Cable	100 ± 2 ° C	168 Hours

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(ii) Tensile Strength & Elongation at Break after completed cable ageing:

Sl.No	Core Identification	Observed Values	
		Tensile Strength N/mm ²	Elongation at Break (%)
1.	Brown	17.82	585.70
2.	Grey	18.99	562.70
3.	Black	17.88	583.75

(iii) Variations Observed from Before Ageing Samples

Sl.No	Core Identification	Observed % Variations		Specified % Variations (Max)	
		Tensile Strength (%)	Elongation At Break (%)	Tensile Strength (%)	Elongation at Break (%)
1.	Brown	-0.12	7.36	± 25	± 25
2.	Grey	-0.99	-1.16		
3.	Black	-6.69	3.34		

3. Water Absorption Test:(Gravimetric)

- a) Temperature : 85 ±2 Deg.C
b) Duration : 336 Hours

Sl.No	Core Identification	Water absorbed in mg/cm ²	
		Observed values	Specified Value (Max)
1.	Brown	0.044	1.0
2.	Grey	0.038	
3.	Black	0.049	

4. Hot Set Test:

Sl.No	Core Identification	Observed Values(%)		Specified Values(Max) (%)	
		Hot set Elongation at 200 ^o C	Permanent set Elongation	Hot set Elongation at 200 ^o C	Permanent set Elongation
1.	Brown	96.50	0.70	175	15
2.	Grey	99.00	0.70		
3.	Black	97.50	0.80		

IV. TESTS ON SEMICONDUCTING SCREEN:

1. RESISTIVITY OF SEMICONDUCTING INSULATION SCREEN:

Sl.No	Core Identification	Resistivity of insulation screen in Ω-m at 90 ^o C			
		Observed Values		Specified Value (max)	
		Unaged Sample	Aged sample	Unaged sample	Aged sample
1.	Brown	1.61	1.41	500	500
2.	Grey	1.37	1.26		
3.	Black	1.29	1.18		


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2. RESISTIVITY OF SEMICONDUCTING CONDUCTOR SCREEN

Sl.No	Core Identification	Resistivity of Conductor screen in Ω -m at 90° C			
		Observed Values		Specified Value (Max)	
		Unaged Sample	Aged sample	Unaged Sample	Aged Sample
1.	Brown	0.32	0.41	500	500
2.	Grey	0.21	0.26		
3.	Black	0.30	0.48		

3. Strippability Test for Insulation Screen:

- a) Specified force required to remove 10 mm strip from the insulation : Between 8N to 45 N
b) Observed values:

Sl.No	Core Identification	Force required to remove 10 mm strip for a length of 100 mm (N)	
		Unaged Sample	Aged Sample
1	Brown	27.4	23.01
2	Grey	29.0	20.90
3	Black	25.6	23.50

V. TESTS ON SHEATH:

1a. Thickness of Oversheath:

- i) Specified minimum : 3.08 mm
ii) Observed Minimum : 3.59 mm

1b. Thickness of inner covering: (Material :PVC)

- i) Specified minimum : 1.56 mm
ii) Observed Minimum : 2.04 mm

2. Tensile Strength and Elongation at Break of Oversheath

A. Before Ageing:

Tensile Strength in N/mm^2		% Elongation	
Specified (min)	Observed	Specified (min)	Observed
12.5	19.56	150.0	262.50

B. Ageing:

Sample	Temperature	Duration
Dumb-bell Sample	100 \pm 2 ° C	168 Hours

C. After Ageing:

Tensile Strength in N/mm^2		% Elongation	
Specified (min)	Observed	Specified (min)	Observed
12.5	18.96	150.0	257.5


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D. Variations Observed from Before Ageing samples

Specified % Variations (Max)	Observed % Variations	
	Tensile Strength	% Elongation
±25%	-3.07	-1.91

E. Completed Cable Ageing: Compatibility Test

(i) Ageing

Sample	Temperature	Duration
200 mm of completed Cable	100 ± 2 ° C	168 Hours

(ii) Tensile Strength & Elongation at Break after Completed Cable Ageing:

Tensile Strength in N/mm ²		% Elongation	
Specified (min)	Observed	Specified (min)	Observed
12.5	18.25	150.0	281.50

(iii) Variations Observed from Before Ageing samples

Specified % Variations (Max)	Observed % Variations	
	Tensile Strength	% Elongation
±25%	-6.70	+7.24

3. Loss of Mass Test for Oversheath:

Sample	Duration	Temperature	Loss of mass in mg/ cm ²	
			Specified (max)	Observed
Dumb-bell Specimens	168 Hours	100 ± 2 ° C	1.5	0.88

4. Pressure Test at High Temperature:

- i) Specified Percentage depth of indentation : 50 % (Max)
 ii) Observed Percentage depth of indentation : 24.60 %

5. Resistance to Cracking :

- i) **Requirement :** No Cracks or any other abnormalities should be observed after test.
 ii) **Result:** No Cracks or any other abnormalities were observed after test.

6. Elongation Test at Low Temperature:

- i) Specified Percentage Elongation at Beak at -15 ± 2 Deg.C: 20 % (Min)
 ii) Observed Percentage Elongation at Beak at -15 ± 2 Deg.C: 210 %

7. Impact Test at Low Temperature:

- i) Test Temperature : -15 ± 2 ° C
 ii) Mass of the Hammer : 1500 gms
 iii) Result : No Cracks were observed on the outer and inner surface of the Sheath after test.

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8. Insulation Resistance constant:

- a) Observed Insulation Resistance constant at 22 Deg.C : 25.96 MΩ km
- b) Specified Insulation Resistance constant at 20 ±2 Deg.C : 0.035 MΩ km (min)

9. Tensile Test for Separation Layer(Inner Sheath):

(i) Before Ageing

Tensile Strength in N/mm ²		% Elongation	
Specified (min)	Observed	Specified (min)	Observed
4.0	16.94	50.0	304.0

(ii) Completed Cable Ageing: Compatibility Test

(a) Ageing

Sample	Temperature	Duration
200 mm of completed Cable	100 ± 2 ° C	168 Hours

(b) Tensile Strength & Elongation at Break after Completed Cable Ageing:

Tensile Strength in N/mm ²		% Elongation	
Specified (min)	Observed	Specified (min)	Observed
4.0	17.11	50.0	282.50

VI. Test under Fire Conditions:

- a) Time of application of flame : 480 ± 2 Seconds
- b) Length of the unaffected portion of cable from the bottom of the top clamp
Specified : 50 mm (min)
Observed : 295 mm
- c) Length of the charred portion of cable downwards from the bottom of the top clamp
Specified : 540 mm (max)
Observed : 510 mm

VII. ELECTRICAL TESTS:

The following electrical tests were carried out in the order of sequence.

1. Partial Discharge Test:

- a) Length of the sample : 10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) : 38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 10 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC


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2. Bending Test

- a) Outer dia of conductor : 18.20 mm
- b) Outer dia. Of Cable : 96.5 mm
- c) Diameter of test cylinder : 1350 mm
- d) Number of bending cycles : Three
- e) Remarks: No Cracking Observed on the Outersheath

3. Partial Discharge Test:

- a) Length of the sample : 10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) : 38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 10 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

4. Tan Delta measurement as a function of Voltage:

- a) Specified tan delta at U₀(Max) : 0.004
- b) Specified increment from 0.5 U₀ to 2U₀ : 0.002 (Max)
- c) Ambient temperature : 27 °C
- d) Observed Values:

Sl. No	Core Identification	Test Voltage (kV) ac	Tan delta (Abs Value)	Capacitance in pF	Increment of Tan Delta
1.	Brown	9.50	0.00091	2168.1	-0.00029
		19.0	0.00083		
		38.0	0.00062		
2.	Grey	9.50	0.00092	2142.6	-0.00042
		19.0	0.00068		
		38.0	0.00050		
3.	Black	9.50	0.00084	2169.9	-0.00033
		19.0	0.00078		
		38.0	0.00051		

5. Tan Delta measurement as a function of Temperature:

- (a) Temperature of the conductor during test : 98 °C
- (b) Test Voltage during measurement : 2 kV ac
- (c) Specified Tan delta(Max) : 0.004
- (d) Observed Values:-

Sl.No.	Core Identification	Capacitance in pF	Tan delta At 98° C
1.	Brown	2075.1	0.00010
2.	Grey	2074.0	0.00051
3.	Black	2052.2	0.00018

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6. Heating Cycle Test:

- a) Conductor Temperature during Heating Cycle : 95 -100⁰ C
- b) Total Duration of Heating cycle : 8 hours
- c) Heating period after attaining Temperature : 2 hours
- d) Natural Cooling Period : 3 hours
- e) Number of heating cycles : 20 Only

Note: Partial Discharge tests were conducted at regular intervals as given below.

7. Partial Discharge Test after 5 Cycles :

- a) Length of the sample : 10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) : 38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 5 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

8. Partial Discharge Test after 10 Cycles :

- a) Length of the sample : 10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) : 38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 5 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

9. Partial Discharge Test after 15 Cycles :

- a) Length of the sample : 10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) : 38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 5 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

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10. Partial Discharge Test after 20 Cycles :

- a) Length of the sample :10.0 metres
- b) Sensitivity of the detector : 5 pC
- c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
- d) Measuring voltage (1.73 U₀) :38 kV ac
- e) Specified discharge magnitude at 1.73 U₀ (Max) : 5 pC
- f) Observed Discharge magnitude :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

11. Impulse Withstand Test:

Test Voltage kV _{peak}	Temperature of Conductor during Test(°C)	Ambient Temperature (°C)		No. of Impulses
		Dry Bulb	Wet Bulb	
194	95-100	30.0	22.0	10 Positive & 10 Negative

Test Connection	The impulse source was connected to the conductor of the particular core (ends shorted) under test and the screen connected to ground. The conductors of the other two cores which were not under test were shorted together with screen and connected to ground.
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Core	Polarity	Shot Number	Oscillogram Number	Test Result
Brown	Positive	First	1650	Withstood
		Tenth	1655	
	Negative	First	1658	
		Tenth	1703	
Grey	Positive	First	1707	Withstood
		Tenth	1712	
	Negative	First	1715	
		Tenth	1720	
Black	Positive	First	1723	Withstood
		Tenth	1728	
	Negative	First	1731	
		Tenth	1736	

(OSCILLOGRAMS ENCLOSED)


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12. High Voltage Test:

- a) Test connection : Between test core and other cores shorted to grounded shield and armour
 b) Test Voltage : 76 kV ac
 c) Duration of test : Four Hours
 d) Ambient Temperature : 28 °C
 e) Length of Sample : 10.0 metres
 f) Result

Sl.No.	Core Identification	Remarks
1.	Brown	WITHSTOOD
2.	Grey	WITHSTOOD
3.	Black	WITHSTOOD

VIII. Adherence of Screens at Short circuit Temperature :

1. Partial Discharge Test :

- a) Length of the sample : 7.0 metres
 b) Sensitivity of the detector : 5 pC
 c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
 d) Measuring voltage (2 U₀) : 38 kV ac
 e) Specified discharge magnitude at 2 U₀ (Max) : 5 pC
 f) Observed Discharge magnitudes :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

2. Thermal Short circuit Test:

As per Short circuit Test Report No. SC15330A Dated 26.06.2015 .

3. Partial Discharge Test :

- a) Length of the sample : 7.0 metres
 b) Sensitivity of the detector : 5 pC
 c) Method of connection : High voltage applied to the test core conductor and other cores shorted to grounded metallic shield and Armour.
 d) Measuring voltage (2 U₀) : 38 kV ac
 e) Specified discharge magnitude at 2 U₀ (Max) : 5 pC
 f) Observed Discharge magnitudes :

Sl.No.	Core Identification	Discharge magnitude in pC
1.	Brown	Less than 5 pC
2.	Grey	Less than 5 pC
3.	Black	Less than 5 pC

IX. Conclusion: The cable meets all the requirement of type test as per BS -6622-2007.


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Test Report No.:DCCD-14521

Date: 26.06.2015 **CPRI**

NOTE

- a) The Test results relate only to the item(s) tested.
- b) Publication or reproduction of this report in any form other than by complete set of the whole report and in the language written, is not permitted without the written consent of CPRI.
- c) Any Corrections/erasure invalidates this test report.
- d) NABL has accredited this laboratory as per ISO 17025-2005, Vide Certificate No. T-0010 for the tests carried out.
- e) Any anomaly/discrepancy in this test report should be brought to our notice within 45 days from the date of issue.

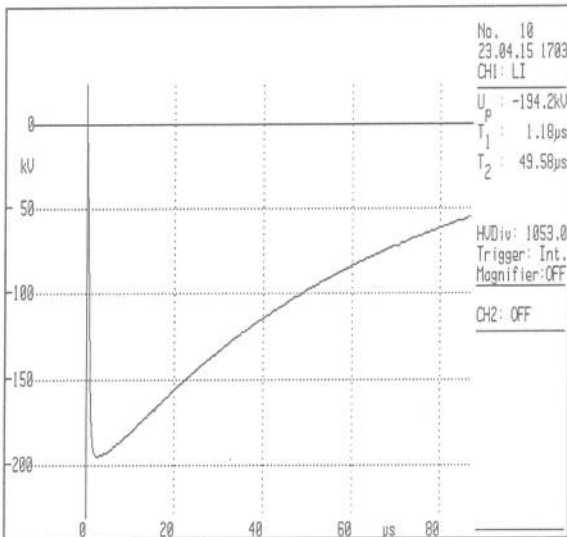
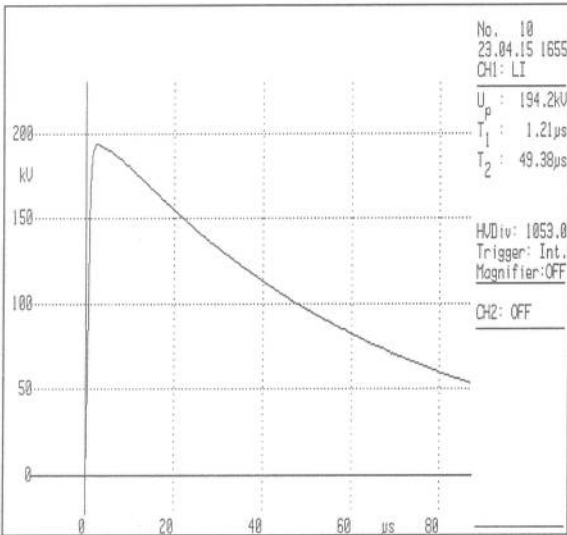
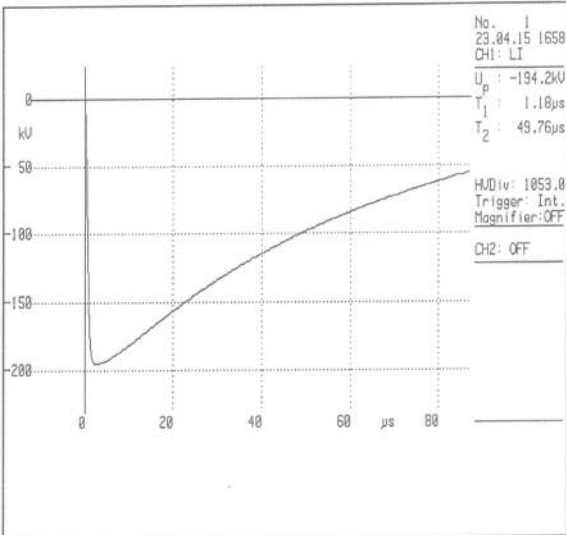

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Customer : M/s. KEC International Limited(Cables Division),Gujarat.
Test Report No. & Date : DCCD-14521 Dated: 26.06.2015
Sample Code : DCCDCAB14S0226
Core : Brown



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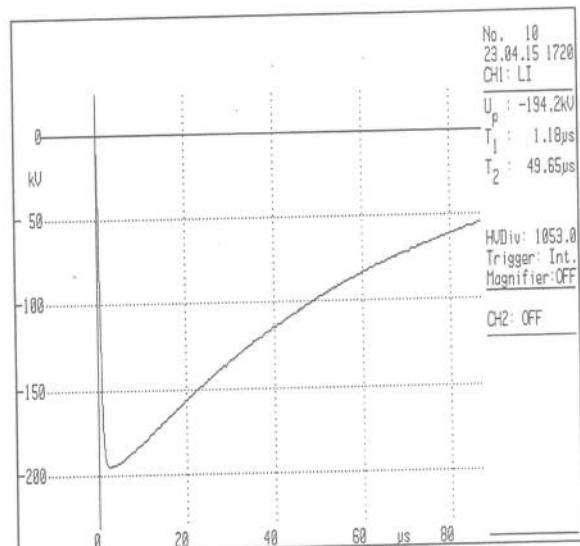
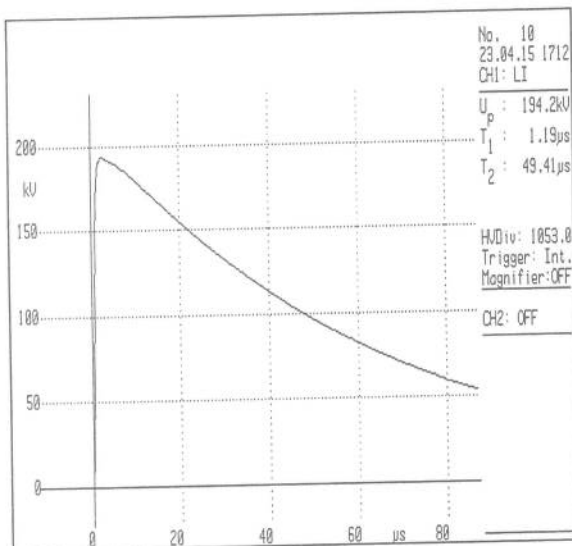
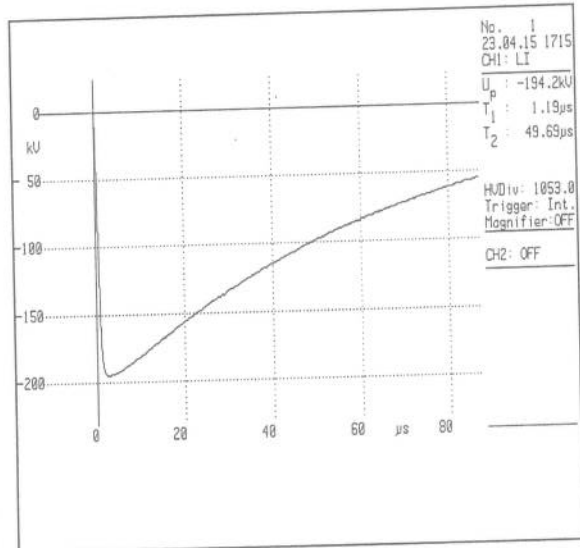
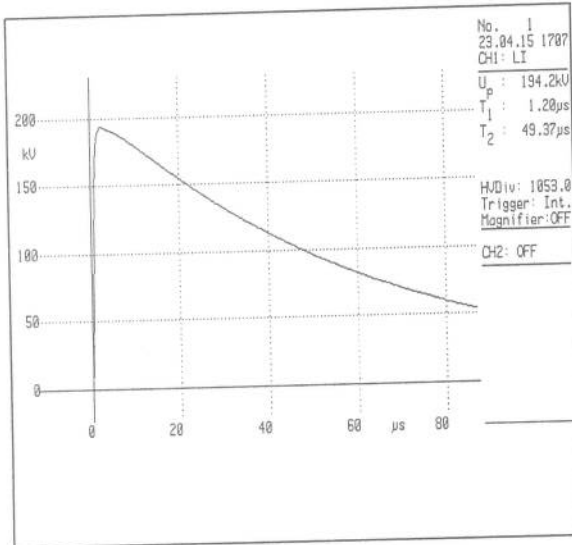
(Thirumurthy)
Test Engineer


CENTRAL POWER RESEARCH INSTITUTE

Customer : M/s. KEC International Limited(Cables Division),Gujarat.
 Test Report No. & Date : DCCD-14521 Dated: 26.06.2015
 Sample Code : DCCDCAB14S0226
 Core : Grey



CPRI




 (Thirumurthy)
 Test Engineer

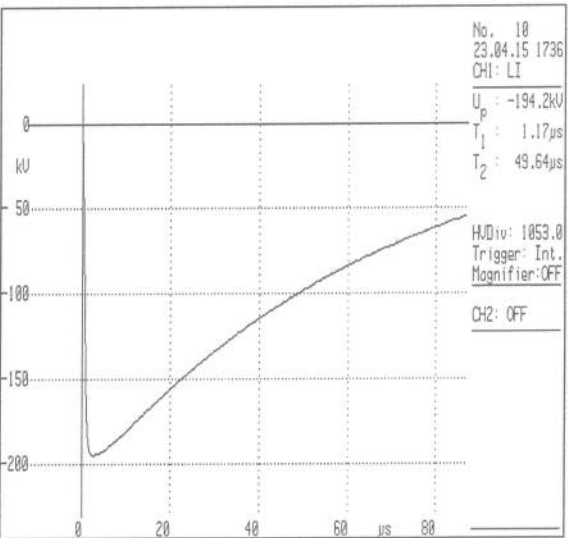
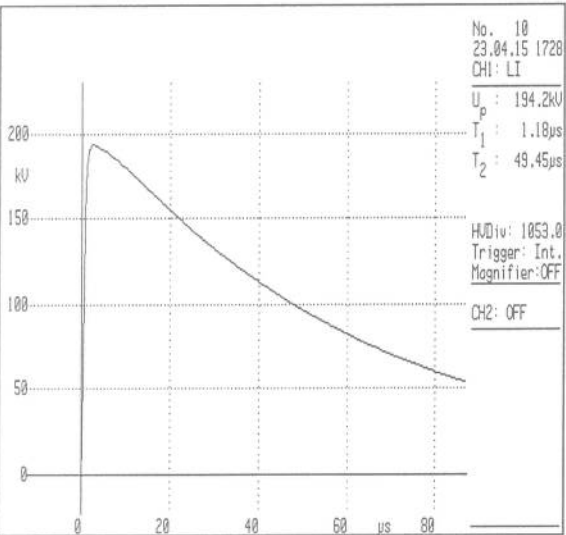
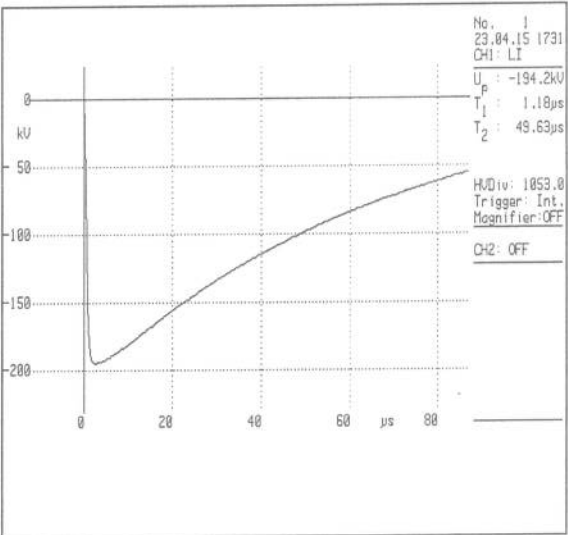
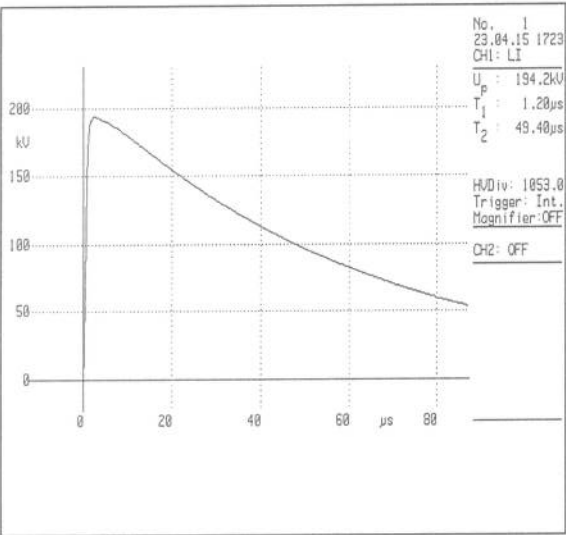
DIAGNOSTIC CABLES & CAPACITORS DIVISION
 P.B.NO.8066, SADASHIVANAGAR P.O
 PROF.SIR C.V.RAMAN ROAD, BANGALORE - 560 080, INDIA
 Tele/Fax: +91 (0) 80-2360 4435

CENTRAL POWER RESEARCH INSTITUTE



CPRI

Customer : M/s. KEC International Limited(Cables Division),Gujarat.
Test Report No. & Date : DCCD-14521 Dated: 26.06.2015
Sample Code : DCCDCAB14S0226
Core : Black



(Thirumurthy)
Test Engineer

यह ड्राइंग सीपीआई की परीक्षण रिपोर्ट से संबंधित है ।
THIS DRAWING PERTAINS TO CPRI TEST REPORT

सं. टीसीसीडी/No. DCCD: 14521

दिनांक/Dated : 28.06.2015

Plain copper (Class-2) confirming to BS EN 60228

Extruded Semi-conducting compound : NOM THICK - 0.30 MM

Extruded XLPE : NOM THICK-8.0 MM & MINIMUM THICK-7.1 MM

Extruded Extruded Semi-conducting compound (Cold strippable) : NOM THICK-0.30 MM

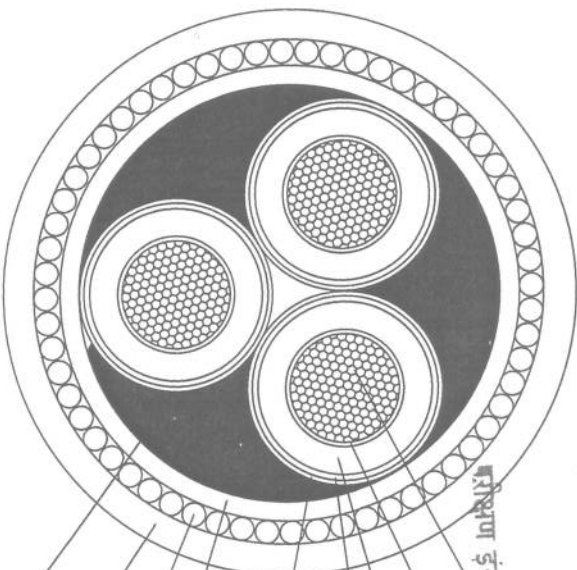
Copper tape

Extruded PVC as per clause 19.7 of BS 6622 : MINIMUM THICK-1.56 MM

Galvanised Steel round wire armour : NOM DIAMETER-3.15 MM

Extruded PVC Type 9 to BS 6622 : MINIMUM THICK-3.08 MM

Polypropylene (PP) fillers with suitable binder tape



Approximate cable OD - 96.0 MM

TITLE	KEC INTERNATIONAL LTD			
	DRAWN BY	KK	APPROVED BY	YT
CROSS SECTIONAL DRAWING OF 3CORE ARMoured CABLES	DATE	3.03.15	DATE	3.03.15
	CHD BY	YT	SCALE = NTS	
	DATE	3.03.15	DRAWING NO. KEC/BS 6622	
19/33(36) kV, 3 x 240 mm ²				

CPRI

TEST REPORT



Central Power Research Institute

(A Govt. of India Society)

P.B.No. 8066, Sadashivanagar Post Office,

Sir C.V. Raman Road,




Bengaluru - 560 080 (INDIA)

CENTRAL POWER RESEARCH INSTITUTE
(Member of STL)



CPRI

TEST REPORT

Test Report Number	SC15330A	Dated: 26 th June, 2015
Name & Address of the Customer	M/s. KEC International Ltd., (Cables Division), Plot No.803, Samlaya Savli Road, Village-Godampura, Taluka-Savli, Vadodara, Gujarat-391 520.	
Name & Address of the Manufacturer	M/s. KEC International Ltd., (Cables Division), Plot No.803, Samlaya Savli Road, Village-Godampura, Taluka-Savli, Vadodara, Gujarat-391 520.	
Particulars of sample tested	3x240 Sq. mm Copper conductor, XLPE insulated, GI Round Wire armoured 19 / 33 kV Cable	
Condition of the sample on receipt	Good	
Type	---	
Designation	2XWY	
Serial number	---	
Number of samples tested	One	
Date (s) of test (s)	22 nd June, 2015	
CPRI sample code no(s).	DCCDCAB14S0226	
Particulars of tests conducted	Adherence of screens at short circuit temperature(Thermal short circuit test)	
Test in accordance with Standard / specification	Clause 20.9 of BS 6622:2007	
Sampling plan	Not applicable	
Customer's requirement	Thermal short circuit test through conductor on one core	
Deviations if any	---	
Name of the witnessing persons		
Customer's representative	Mr. B. P. Bhagavan	
Other than customer's representatives	None	
Test subcontracted with address of the laboratory	None	
Documents constituting this report (in words)		
Number of sheets	Four	
Number of oscillograms	One	
Number of graphs	Nil	
Number of photos	Nil	
Number of test circuit diagrams	One	
Number of drawings	Nil	
 (H.S.Lokeshappa) Test Engineer		 (Swaraj Kumar Das) Joint Director

Test Report Number: SC15330A

Dated: 26th June, 2015

Description of sample tested (Ratings as assigned by the manufacturer)

Test sample	3x240 Sq. mm Copper conductor, XLPE insulated, GI Round Wire armoured 19 / 33 kV Cable
Type	---
Designation	2XWY
Serial number	---
Rated voltage	19/33 kV
Rated current	500 A
Frequency	50 Hz
Number of cores	Three (Test conducted on one core)
Type of outer sheath	PVC
Type of armour	Round wire
Conductor cross-section	240 sq. mm
Conductor material	Copper
Length of the cable	7 m
Maximum temperature when carrying short-circuit	250 °C

Documents attached to this report

Oscillogram number(s)	SC15330A.S01
Test circuit diagram number(s)	CRTL/SC/STC-02B


Test Engineer

Test Report Number: SC15330A

Dated: 26th June, 2015

Schedule of test

ADHERENCE OF SCREENS AT SHORT CIRCUIT TEMPERATURE(Clause 20.9)

Test conditions

Source	Short-circuit generator
Test on conductor	Single
Frequency	50 Hz
Test sample	
Condition before test	Good
No. of phases	Three; only one core of the cable connected to the source
Test details	
Test on conductor	CRTL/SC/STC-02B
Short-circuit applied	On the other end of the core
Short-circuit point	Grounded

Test on conductor Ambient Temperature: 24.5°C

Oscillogram No.	Rms Current (kA)	Duration (s)	Observation
SC15330A.S01	31.14*	2.05	During test: No abnormality

*Equivalent to 44.58 kA rms for 1.0 s

Physical Inspection: No visible external damage to the cable & conductor


Test Engineer

CENTRAL POWER RESEARCH INSTITUTE
(Member of STL)



Test Report Number: SC15330A

Dated: 26th June, 2015

NOTE

- a) The Test results relate only to the item(s) tested.
- b) Publication or reproduction of this report in any form other than by complete set of the whole test report / Certificate and in the language written is not permitted without the written consent of CPRI.
- c) Any Corrections / erasure invalidate the test Report/Certificate.
- d) Any anomaly / discrepancy in the test report / Certificate should be brought to notice of CPRI within 45 days from the date of issue.

Additional Information:

This is not a certificate of rating. A certificate of rating is not issued as only limited tests as requested by the customer were carried out.

CPRI issues following types of reports/certificates:

Test Report:

The test report contains the record of the values of test parameters as obtained during testing, the physical condition of the sample during / after the test(s) and copy of oscillogram(s). Test report is issued when partial tests are performed as against the complete test requirement for proving specific ratings.

Sealed Certificate:

The sealed certificate is issued, on request and payment of the prescribed charges thereof only when the sample of particular type and rating has satisfactorily passed all the specified tests in compliance with the condition stipulated in a published National / International standard.

CPRI issues the following type test certificates based generally on STL Guidelines:

- I. Type test certificate of Short Circuit Performance.
- II. Type test certificate of Switching Performance.
- III. Type test certificate of Temperature Rise Performance.
- IV. Type test certificate of Dielectric Performance.
- V. Type test certificate of complete type test.


Test Engineer

52.01 kA



740.62 V



लघु पथन प्रयोगशाला
Short-Circuit Laboratory
केन्द्रीय विद्युत अनुसंधान संस्थान
Central Power Research Institute
बैंगलूरु / Bengaluru - 560 080

255.15 milli seconds

Shri...
TEST ENGINEER :-

SC15330A.S01

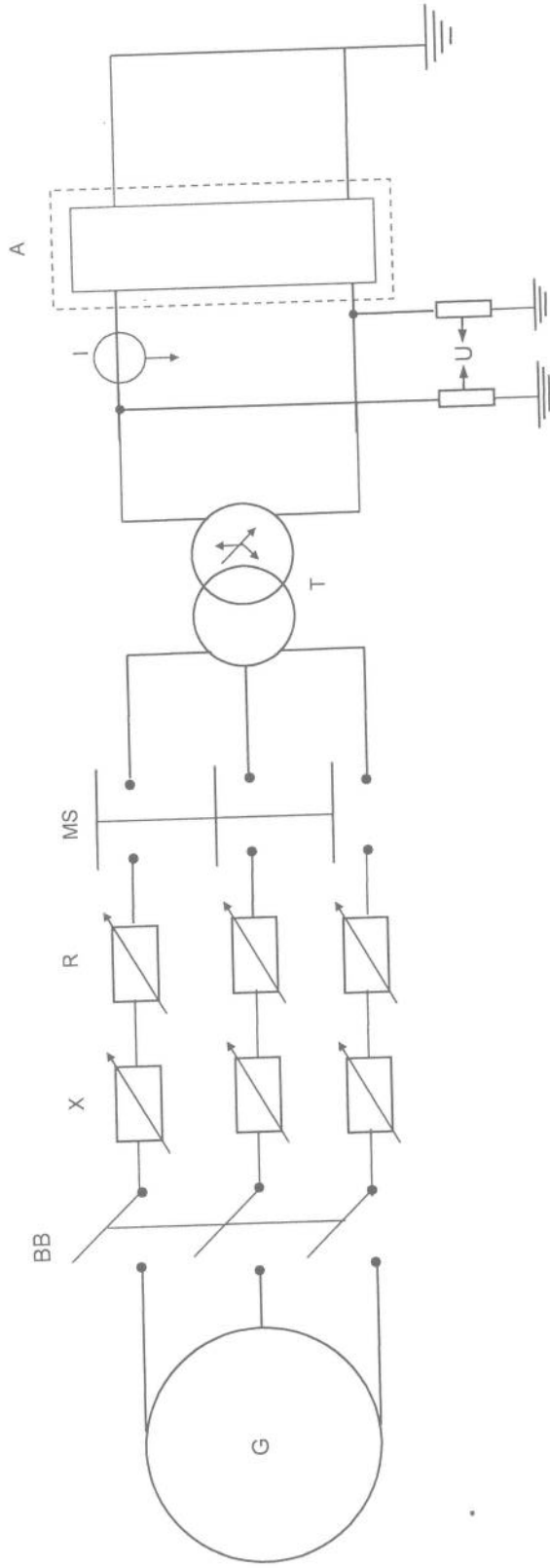
Dt: 6/22/2015



CPRI

Schematic of main & measurement circuits - Single phase test

Circuit Number: CRTL/SC/STC-02B



G	Short-circuit Generator	T	Transformer
BB	Back Up Circuit Breaker	A	Sample Under Test
X	Reactor	I	Current Sensor
R	Resistor	U	Voltage Sensor
MS	Make Switch		

Shenoy
Test Engineer