



# केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो सर सी. वी. रामन रोड, 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](mailto:mallik@cpri.in)

### DIAGNOSTIC, CABLES & CAPACITORS DIVISION CABLES LAB

2/1/DCCD/CAB/2015-16

Date: 09.07.2015

M/s. Gala Shrink Fit,  
15, ABCD, Govt. Industrial Estate,  
Chakpot, Kandavali ( W ) , Mumbai-400057

Dear Sir,

Ref: Customer request dated 29.06.2015

Sub: Type test on 3X 240 sq.mm 11 kV Cable accessories

With reference to the above, type test on Heat shrinkable Indoor termination, outdoor termination an straight through joint mounted on 3X 240 sq.mm 6.35.11 kV XLPE Cable, as per sequence 1.3/2.3 of IEC 60502-4 has been completed and our Test report No. DCCD-14698 dated 09.07.2015 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

(S.Ganga)  
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)**



# CENTRAL POWER RESEARCH INSTITUTE



**CPRI**

## TEST REPORT

**Test Report Number** : DCCD-14698 Date :09.07.2015

**Name & Address of the Customer** : M/s. Gala Shrink Fit,  
15, ABCD, Govt. Industrial Estate,  
Chakpot, Kandavali ( W) , Mumbai-400057.

**Name & Address of the Manufacture** : M/s. Gala Shrink Fit,  
Unit -2, Plot No. 5 to 9, Palghar,Manor Road,  
Chahade Village, Taluka:Palghar,  
Dist : Palghar-401404.Maharashtra.

**Particulars of sample tested** : 6.35/11(12) kV Heat Shrinkable Indoor termination, Outdoor  
termination and Straight through joint mounted on 3 X 240 mm<sup>2</sup>  
11(12) kV XLPE Cable

**Condition of the sample on receipt** : New  
**Type** : 'GALA SHRINK FIT " CABLINK" Indoor termination, Outdoor  
termination and Straight through joint

**Designation** : **Cable -**  
3 X 240 sq.mm, Aluminium conductor, XLPE insulated, PVC  
Sheathed Galvanised steel Formed wire armoured 6.35/11 KV Cable  
: **Accessories (In One loop):**  
No. of joints : One  
Type : Heat Shrinkable straight through  
No. of terminations : One Indoor & One Outdoor  
Type : Heat Shrinkable  
Voltage Rating : 6.35/11 KV  
One loop with One straight through joint One  
Indoor termination & One Outdoor termination

**Serial Number** : Nil  
**Number of Samples tested** : One loop  
**Date(s) of Test(s)** : 29.06.2015 to 07.07.2015  
**CPRI Sample Code no(s)** : DCCDCAB15S0125

**Particulars of test conducted** : Type Test (Sequence 1.3/2.3)  
**Test in accordance with**  
**Standard /Specification** : As per IEC 60502-4- 2010, sequence 1.3 & 2.3  
**Sampling plan** : Not Applicable  
**Customer's requirement** : Nil  
**Deviation if any** : Nil

  
(Thirumurthy)  
**Test Engineer**



  
(S.Ganga)  
**Joint Director**

# CENTRAL POWER RESEARCH INSTITUTE



## TEST REPORT

Test Report No.:DCCD-14698

Date:09.07.2015

### 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 Certificate (in words)

Number of sheets : Five + One Report of four Pages  
Number of oscillogram/s : Twelve (Two Pages)  
Number of graphs : Nil  
Number of photos : Nil  
Number of test circuit diagrams : Nil  
Number of drawings : Three Drg.No.1: GSF/K01/03/15  
Drg.No.2: GSF/K02/03/15  
Drg.No.3: GSF/K03/03/15

(Thirumurthy)  
Test Engineer

(S.Ganga)  
Joint Director

# CENTRAL POWER RESEARCH INSTITUTE



**CPRI**

## TEST REPORT

Test Report No.:DCCD-14698

Date:09.07.2015

## TEST RESULTS

### 1. AC HIGH VOLTAGE TEST (Dry):

- a) Test connection : Between test core and other cores shorted to grounded shield and armour
- b) Test Voltage : 28.5 kV ac
- c) Duration of test : Five Minutes
- d) Ambient Temperature : 28 °C
- e) Length of Sample : 10 metres
- f) Result :

Sl. No.	Core Identification	Remarks
1.	Red	WITHSTOOD
2.	Yellow	WITHSTOOD
3.	Blue	WITHSTOOD

### 2. DC HIGH VOLTAGE TEST (Dry):

- a) Test connection : Between test core and other cores shorted to grounded shield and armour
- b) Test Voltage : 25.4 kV dc
- c) Duration of test : Fifteen Minutes
- d) Ambient Temperature : 28 °C
- e) Length of Sample : 10 metres
- f) Result :

Sl. No.	Core Identification	Remarks
1.	Red	WITHSTOOD
2.	Yellow	WITHSTOOD
3.	Blue	WITHSTOOD

### 3. Thermal & Dynamic Short circuit Test through conductor

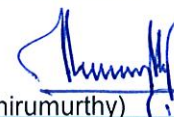
As per Short circuit Test Report No.SC15364A Dated 02.07.2015 ( Enclosed)

### 4. IMPULSE WITHSTAND TEST :

Ambient Conditions:

Dry Temperature( Deg. C)	Wet Temperature( Deg. C)	Atmospheric Pressure ( mm of Hg)
28.0	22.0	683.0

Test Connection	The impulse source was connected to the conductor of the particular phase (ends shorted) under test and the screen connected to ground. The conductors of the other two phases which were not under test were shorted together with their screen and connected to ground.
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(Thirumurthy)

**TEST ENGINEER**



# CENTRAL POWER RESEARCH INSTITUTE



**CPRI**

Test Report No.:DCCD-14698

## TEST REPORT

Date:09.07.2015

## TEST RESULTS

Phase	Polarity	Shot Number	Oscillogram Number	Result
Red	Positive	First	02	Withstood
		Tenth	11	
	Negative	First	13	
		Tenth	22	
Yellow	Positive	First	24	Withstood
		Tenth	33	
	Negative	First	35	
		Tenth	44	
Blue	Positive	First	46	Withstood
		Tenth	55	
	Negative	First	57	
		Tenth	66	

(Oscillograms enclosed)

### 5. AC VOLTAGE WITHSTAND TEST :

- a) Test connection : Between test core and other cores  
shorted to grounded shield and armour
- b) Test Voltage : 16 kV ac
- c) Duration of test : Fifteen minutes
- d) Ambient Temperature : 28 °C
- e) Length of sample : 10 metres
- f) Result :

Sl. No.	Core Identification	Remarks
1.	Red	WITHSTOOD
2.	Yellow	WITHSTOOD
3.	Blue	WITHSTOOD

### 6. EXAMINATION:

On completion of the tests, the joints and terminations were examined.

Remarks: No cracking in the filling, moisture path across primary seal, or corrosion and /or tracking observed.

  
 (Thirumurthy)  
**TEST ENGINEER**



TEST REPORT

Test Report No.:DCCD-14698

Date:09.07.2015

CPRI

NOTE

- a) The test results relate only to the item(s) tested.
- b) Publication or reproduction of this test 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 Correction/erasure invalidates the test report.
- d) Any anomaly/discrepancy in this test report should be brought to the notice of CPRI within 45 days from the date of issue.

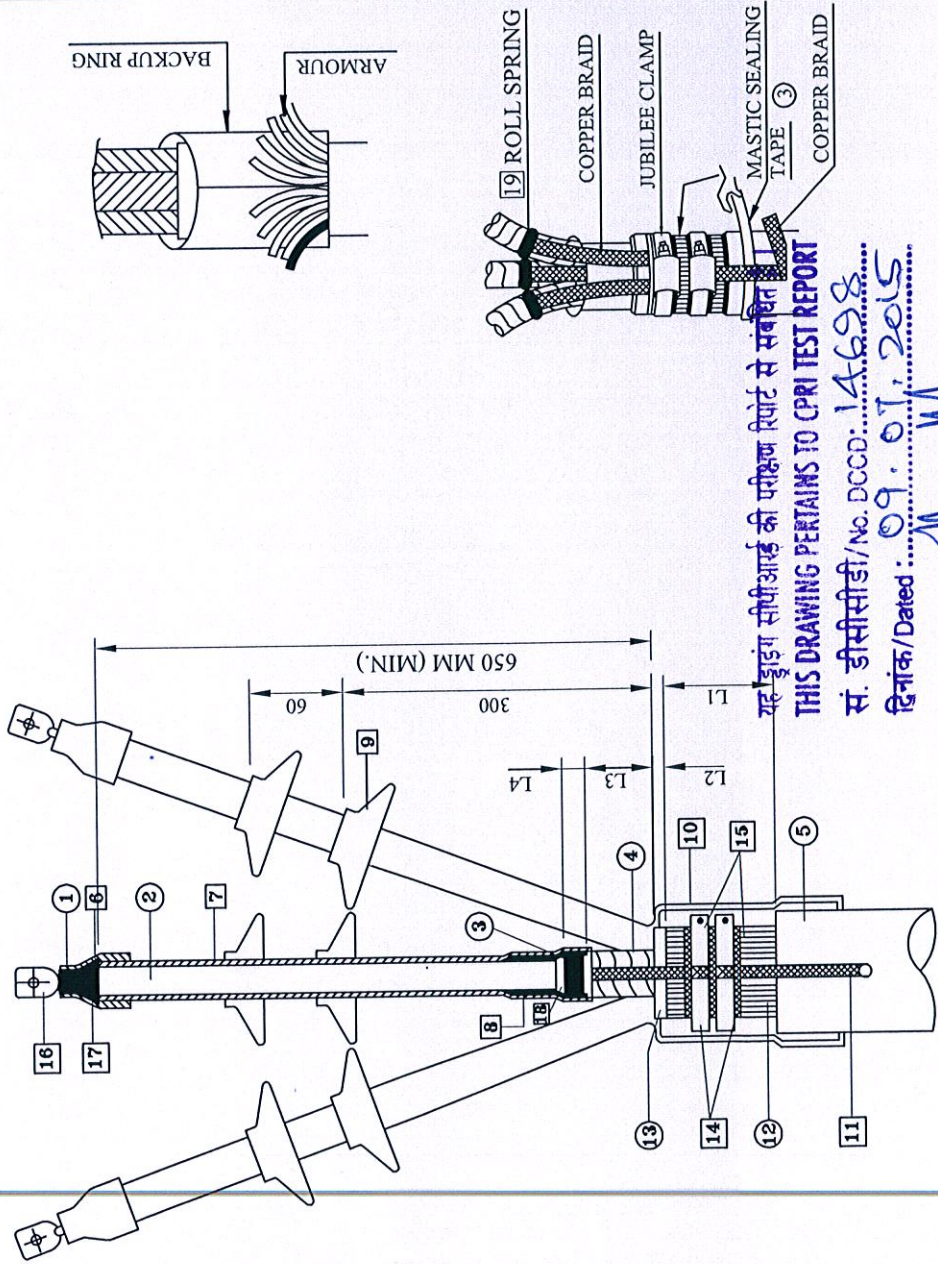
  
(Thirumurthy),  
TEST ENGINEER



○	CABLE COMPONENTS
□	KIT CONTENTS (MAJOR PARTS)
△	KIT CONTENTS (INSTALLATION AIDS)
L4	LENGTH OF SEMI CONDUCTING SCREEN OF CORE
L3	LENGTH OF METALLIC SHIELDING OF CORE
L2	LENGTH OF INNER SHEATH
L1	LENGTH OF ARMOUR
<b>LEGENDS</b>	

△	22	MOPPING CLOTH
△	21	ALOXITE EMERY TAPE
△	20	SILICON GREASE
19	19	SOLDER WIRE + FLUX
18	18	SEMI CONDUCTIVE PAINT + STRESS CONTROL MASTIC
17	17	LUG SEALING MASTIC RED
16	16	TERMINAL LUG
15	15	MASTIC SEALING TAPE
14	14	JUBILEE CLAMPS
13	13	INNER SHEATH
12	12	ARMOUR
11	11	TINNED COPPER EARTH BRAID (MAIN EARTH)
10	10	ANTI TRACKING CABLE BREAK OUT
9	9	RAIN SHED
8	8	STRESS CONTRL TUBING
7	7	ANTI TRACKING WEATHER RESISTANT TUBING
6	6	TERMINAL SLEEVE
5	5	OUTER SHEATH
4	4	METAL SHIELD
3	3	SEMI CONDUCTIN SCREEN
2	2	INSULATION
1	1	CONDUCTOR
S.No.		DESCRIPTION

<b>GALA</b> <small>Insulation Manufacturing, Substitutes</small>		<b>Gala Shrink Fit</b> MUMBAI - 401 105 (INDIA)		<b>GALA SHRINK FIT</b> (CABLINK)	
Title :-		HEAT SHRINKABLE OUTDOOR TERMINATION SUITABLE FOR 6.35/11KV (U max: 12KV)		SCALE : NTS	
3 CORE XLPE ARMURED CABLES		REV. NO. 00		DRG. No.	
Drawn. By S. Kumar	CHK. BY A.K.Shaw	APPD. BY Jayaraman	DATE 17/03/15	GSF/K01/03/15	



3 Core XLPE Cable

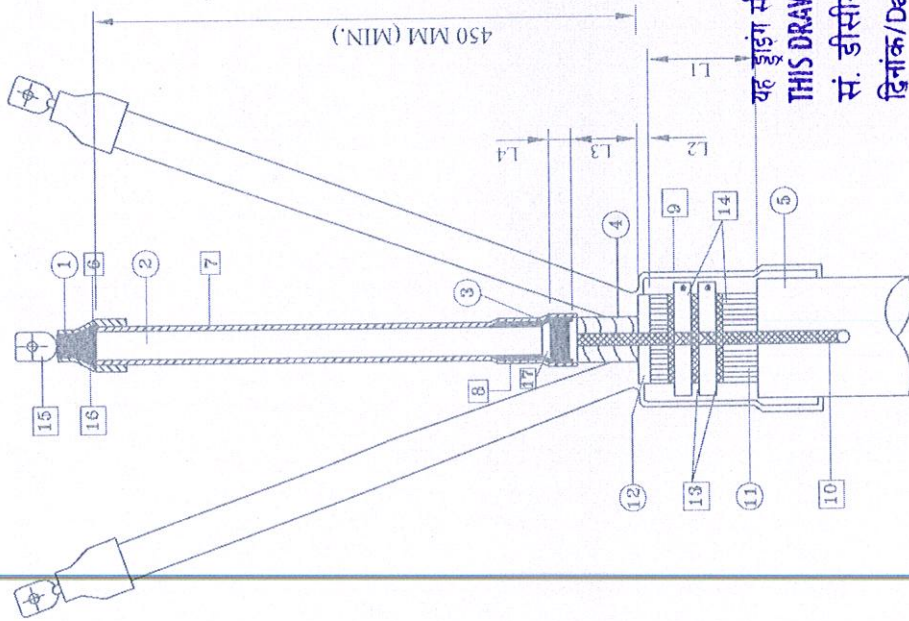
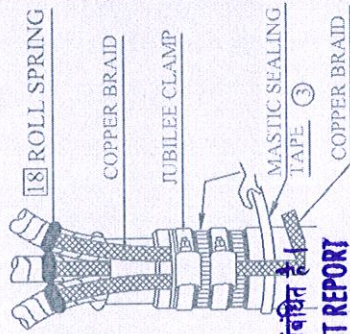
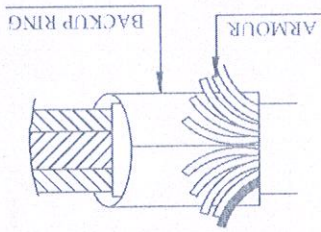
परीक्षण इंजीनियर/Test Engineer

240-400	80	20	100	50
150-185	80	20	100	50
70-120	60	20	100	50
16-50	50	20	100	50
CABLE SIZE (Sq.mm)	L1	L2	L3	L4
CABLE CUTTING DIMENSIONS FOR 3 CORE CABLES				



○	CABLE COMPONENTS
□	KIT CONTENTS (MAJOR PARTS)
△	KIT CONTENTS (INSTALLATION AIDS)
L4	LENGTH OF SEMI CONDUCTING SCREEN OF CORE
L3	LENGTH OF METALLIC SHIELDING OF CORE
L2	LENGTH OF INNER SHEATH
L1	LENGTH OF ARMOUR
LEGENDS	

△1	MOPPING CLOTH
△20	ALOXITE EMERY TAPE
△19	SILICON GREASE
18	SOLDER WIRE + FLUX
17	SEMI CONDUCTIVE PAINT + STRESS CONTROL MASTIC
16	LUG SEALING MASTIC RED
15	TERMINAL LUG
14	MASTIC SEALING TAPE
13	JUBILEE CLAMPS
12	INNER SHEATH
11	ARMOUR
10	TINNED COPPER EARTH BRAID (MAIN EARTH)
9	ANTI TRACKING CABLE BREAK OUT
8	STRESS CONTRL TUBING
7	ANTI TRACKING WEATHER RESISTANT TUBING
6	TERMINAL SLEEVE
5	OUTER SHEATH
4	METAL SHIELD
3	SEMI CONDUCTING SCREEN
2	INSULATION
1	CONDUCTOR
S.No.	DESCRIPTION



यह ड्राइंग सीपीआई की परीक्षण रिपोर्ट से संबंधित है।  
**THIS DRAWING PERTAINS TO CPRI TEST REPORT**  
 सं. डीसीसीडी/No. DCCD: 14698  
 दिनांक/Dated : 09.07.2015

3 Core XLPE Cable

परीक्षण इंजीनियर/Test Engineer

240-400	80	20	100	50
150-185	80	20	100	50
70-120	60	20	100	50
16-50	50	20	100	50
CABLE SIZE (Sq.mm)	L1	L2	L3	L4
CABLE CUTTING DIMENSIONS FOR 3 CORE CABLES				

**GALA** Mumbai Insulating Solutions  
**Gala Shrink Fit** MUMBAI - 401 105 (INDIA)  
**GALA SHRINK FIT (CABLINK)**

Title :-  
 HEAT SHRINKABLE INDOOR TERMINATION SUITABLE FOR 6.35/11KV (U max: 12KV) 3 CORE XLPE ARMoured CABLES

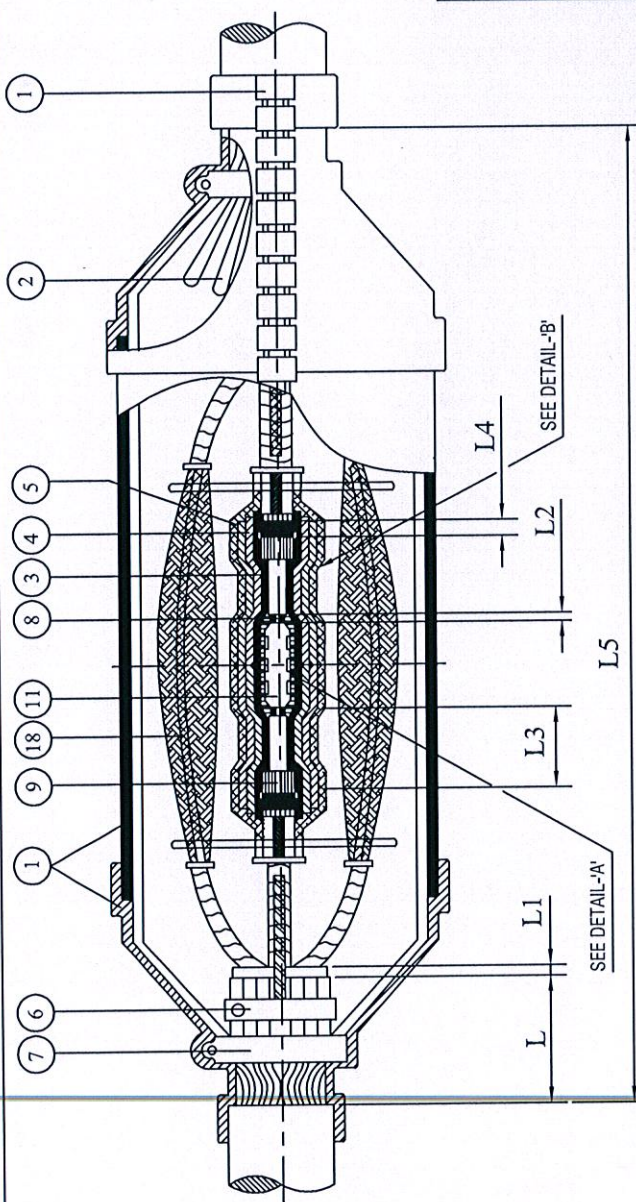
Scale : NTS  
 REV. NO. 00

Drawn By: S. Kumor  
 APPD. BY: Jayaraman  
 DATE: 17/03/15  
 DRG. No: GSF/K07/03/15



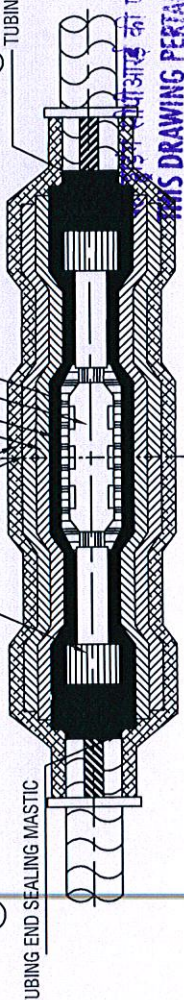
400-500	100	20	5	90	70	1400
240-300	100	20	5	90	70	1400
150-185	100	20	5	90	70	1300
70-120	80	20	5	90	70	1200
16-50	60	20	5	90	70	1200
Cable size sq. mm	L	L1	L2	L3	L4	L5

Cable Cutting Dimensions for 3 Core XLPE Cables



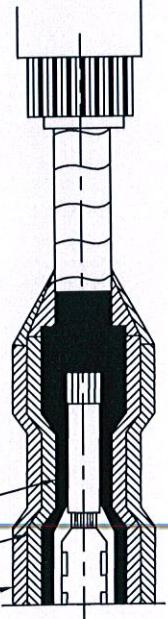
**3 Core XLPE Cable**

- ① COPPER WOVEN FLEXIBLE MESH TAPE (1/2 COVER LAPPED)
- ⑤ H.S. DUAL WALL TUBING
- ⑨ STRESS CONTROL MASTIC
- ⑪ H.S. INSULATING TUBING
- ⑫ H.S. STRESS CONTROL TUBING
- ⑬ FERRULE
- ⑭ H.S. STRESS CONTROL MASTIC FOR FERRULE REGION
- ⑮ TUBING END SEALING MASTIC



**DETAIL - A**

- H.S. DUAL WALL TUBING
- H.S. INSULATING TUBING
- H.S. STRESS CONTROL TUBING



**DETAIL - B**

L4	LENGTH OF SEMI CONDUCTING SCREEN
L3	LENGTH OF XLPE INSULATION
L2	LENGTH OF BARE CONDUCTOR BETWEEN FERRULE AND XLPE INSULATION
L1	LENGTH OF INNER SHEATH
L	LENGTH OF ARMOUR

**श्रीक्षण इंजीनियरिंग/ Test Engineer**

THIS DRAWING PERTAINS TO CPRI TEST REPORT  
 सं. डीसीसीटी/No. DCCD: 14698  
 दिनांक/ Dated : 09.07.2015

19	DETAILED INSTRUCTION MANUAL
18	METAL SCREEN CONTINUITY SYSTEM CONSISTING OF COPPER WOVEN FLEXIBLE MESH TAPE + SOLDER WIRE+FLUX + COPPER BINDING WIRE
17	CLEANING SOLVENT
16	MOPPING CLOTH
15	PVC ADHESIVE TAPE
14	ALOXIDE EMERY TAPE
13	COTTON TAPE
12	MASTIC SEALING TAPES
11	INLINE CONNECTORS (FERRULE) - COMPRESSION TYPE
10	SILICON GREASE
9	SEMI CONDUCTIVE PAINT + STRESS CONTROL MASTIC FOR CUT END
8	STRESS CONTROL MASTIC FOR FERRULE REGION
7	JUBILEE CLAMPS FOR FIXING OVER THE PROTECTIVE COVER (CANNISTER) - 2 NOS.
6	ARMOUR EARTHING MATERIAL (SUPPORT RING - 2 NOS.+ TINNED COPPER BRAID + JUBILEE CLAMP - 2 NOS.)
5	HEAT SHRINKABLE DUAL WALL TUBINGS (RED + BLACK)
4	HEAT SHRINKABLE INSULATION TUBINGS (RED)
3	HEAT SHRINKABLE STRESS CONTROL TUBINGS (BLACK)
2	GALVANISED WRAP AROUND JOINT CASE (CANNISTER)
1	HEAT SHRINKABLE OUTER JACKETING SLEEVE
S.No.	DESCRIPTION OF KIT CONTENTS

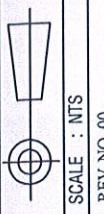


**Gala Shrink Fit**  
 MUMBAI - 401 105 (INDIA)

**GALA SHRINK FIT (CABLINK)**

TITLE :-

HEAT SHRINKABLE STRAIGHT THROUGH JOINT SUITABLE FOR 6.35/11KV (U max: 12KV)  
 3 CORE XLPE ARMoured CABLES

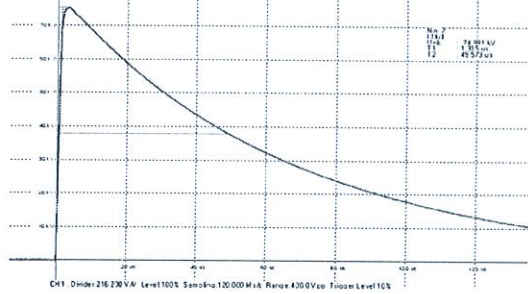


Drawn. By S. Kumar	CKD. BY A.K.Shaw	APPD. BY Jayaraman	DATE 17/03/15	DRG. NO. GSF/K03/03/15
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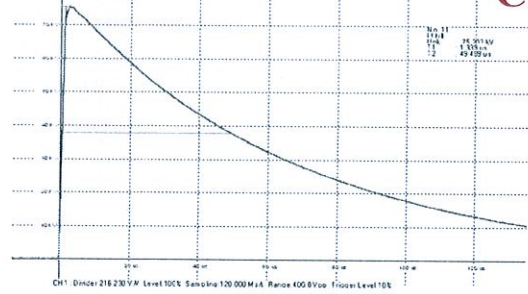


CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:12:53 PM # 206357



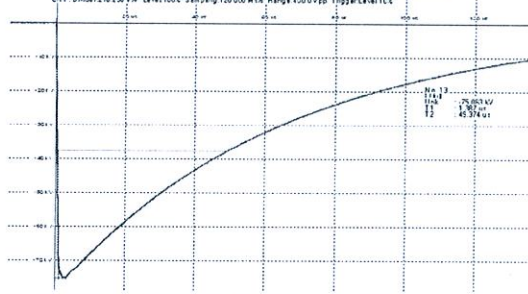
No. 10 LI full Upk: 74.991 kV T1: 1.315 us T2: 49.573 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:16:48 PM # 206366



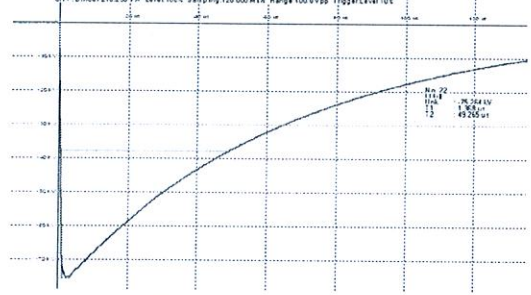
No. 11 LI full Upk: 75.203 kV T1: 1.339 us T2: 49.489 us

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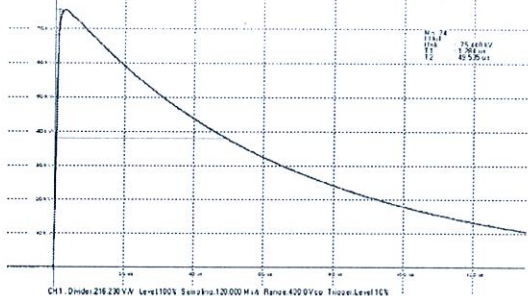
No. 12 LI full Upk: -75.063 kV T1: 1.387 us T2: 49.374 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:21:45 PM # 206377



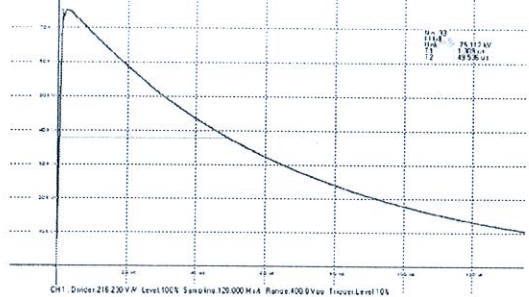
No. 13 LI full Upk: -75.264 kV T1: 1.368 us T2: 49.265 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:25:24 PM # 206379



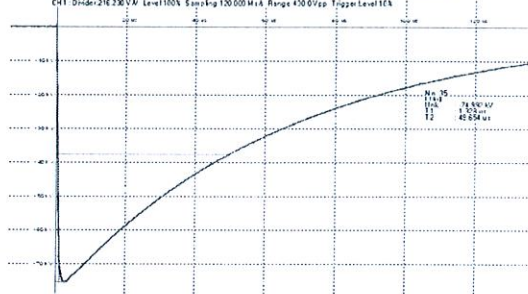
No. 14 LI full Upk: 75.440 kV T1: 1.284 us T2: 49.535 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:28:34 PM # 206388



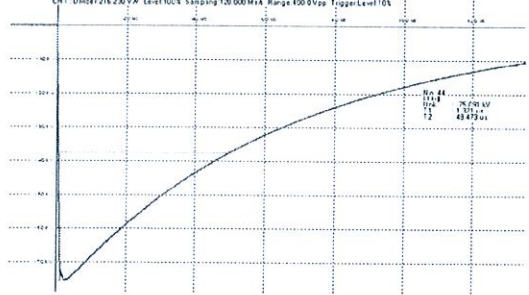
No. 15 LI full Upk: 75.112 kV T1: 1.309 us T2: 49.536 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:30:35 PM # 206390



No. 16 LI full Upk: -74.992 kV T1: 1.328 us T2: 49.654 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:33:36 PM # 206399

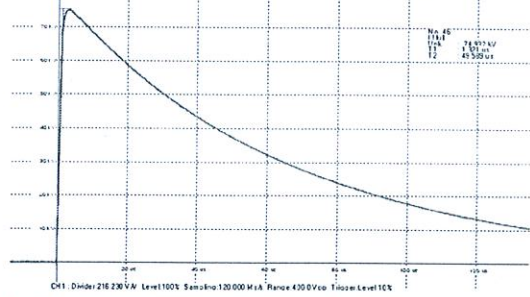


No. 17 LI full Upk: -75.091 kV T1: 1.321 us T2: 49.473 us

*[Handwritten Signature]*  
TEST ENGINEER

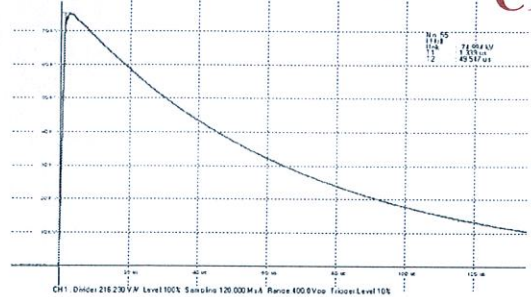


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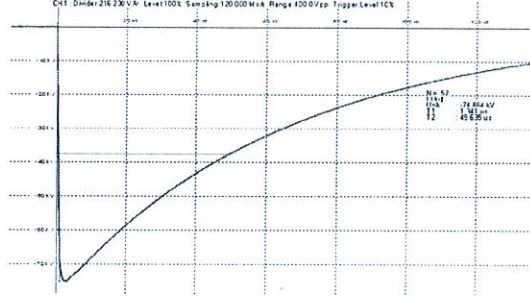
No. 46 LI full Upk: 74.932 kV T1: 1.321 us T2: 49.589 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:39:21 PM # 206410



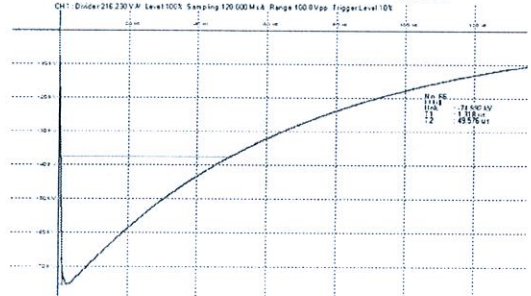
No. 55 LI full Upk: 74.994 kV T1: 1.339 us T2: 49.547 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:41:27 PM # 206412

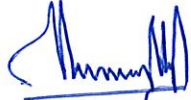


No. 57 LI full Upk: -74.864 kV T1: 1.341 us T2: 49.635 us

CPRI/HV/GSF/CABLE CH: 1 7/6/2015 4:44:28 PM # 206421



No. 66 LI full Upk: -74.992 kV T1: 1.318 us T2: 49.576 us

  
TEST ENGINEER



CPRI

## TEST REPORT



# Central Power Research Institute

(A Govt. of India Society)

P.B.No. 8066, Sadashivanagar Post Office,  
Sir C.V. Raman Road,  
Bangalore - 560 080 (INDIA)

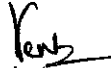
**CENTRAL POWER RESEARCH INSTITUTE**  
(Member of STL)

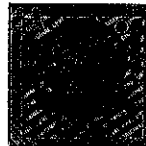


**CPRI**

**TEST REPORT**

<b>Test Report Number</b>	SC15364A	<b>Dated:</b> 2 <sup>nd</sup> July, 2015
<b>Name &amp; Address of the Customer</b>	M/s. Gala Shrink Fit, 15 ABCD, Govt. Industrial Estate, Charkop, Kandavali (W), Mumbai – 400 057.	
<b>Name &amp; Address of the Manufacturer</b>	M/s. Gala Shrink Fit, Unit 2, Plot No. 5 to 9, Palghar, Manor Road, Chahade Village, Taluka : Palghar, Dist: Palghar - 401 404, Maharashtra.	
<b>Particulars of sample tested</b>	3 x 240 sq. mm. Aluminium Conductor, XLPE insulated, Galvanised Steel Formed Wire armoured, PVC sheathed, 6.35/11 kV Cable with Heat shrinkable indoor termination, outdoor termination & a straight through joint	
<b>Condition of the sample on receipt</b>	Good	
Type	GALA SHRINK FIT "CAB LINK"	
Designation	Heat Shrinkable Indoor termination, outdoor termination & straight through joint	
Serial number	---	
Number of samples tested	One	
Date (s) of test (s)	30 <sup>th</sup> June & 1 <sup>st</sup> July, 2015	
CPRI sample code no(s).	DCCDCAB15S0125	
<b>Particulars of tests conducted</b>	Thermal & Dynamic Short-Circuit (conductor)	
Test in accordance with	Sequence 1.3/2.3 of IEC 60502-4 : 2010	
Standard / specification	Not applicable	
Sampling plan	Dynamic short circuit on conductor at 2.55 times the thermal short circuit current	
Customer's requirement	Nil	
Deviations if any	Nil	
<b>Name of the witnessing persons</b>		
Customer's representative	Mr. Arun Kumar Shaw, Assistant Manager - QA	
Other than customer's representatives	None	
Test subcontracted with address of the laboratory	None	
<b>Documents constituting this report (in words)</b>		
Number of sheets	Four	
Number of oscillograms	Three	
Number of graphs	Nil	
Number of photos	Nil	
Number of test circuit diagrams	One	
Number of drawings	Nil	

  
(G. Venkataramanaiah)  
**Test Engineer**



  
(Swaraj Kumar Das)  
**Joint Director**

Sheet 1 of 4



**CENTRAL POWER RESEARCH INSTITUTE**  
(Member of STL)



**CPRI**

Test Report Number: SC15364A

Dated: 2<sup>nd</sup> July, 2015

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

Test sample	3 x 240 sq. mm. Aluminium Conductor, XLPE insulated, Galvanised Steel Formed Wire armoured, PVC sheathed, 6.35/11 kV Cable with Heat shrinkable indoor termination, outdoor termination & a straight through joint
Type	GALA SHRINK FIT "CAB LINK"
Designation	Heat Shrinkable Indoor termination, outdoor termination & straight through joint
Serial number	---
Type of insulation	XLPE (cable)
Rated voltage	6.35 / 11 kV
Rated current	400 A
Frequency	50 Hz
Number of cores	Three
Type of sheath	PVC
Type of armour	Galvanised steel formed wire
Conductor cross-section	3 x 240 sq.mm
Conductor material	Aluminium
Length of the cable	10 m
Type of terminations	Heat shrinkable type indoor & outdoor terminations
Type of joints	Heat shrinkable type straight through joint

**Documents attached to this report**

Oscillogram number(s)	SC15364A.S01, SC15364A.S02 & SC15364A.S03
Test circuit diagram number(s)	CRTL/SC/STC-03A

  
Test Engineer

Sheet 2 of 4

**CENTRAL POWER RESEARCH INSTITUTE**  
(Member of STL)



**CPRI**

Test Report Number: SC15364A

Dated: 2<sup>nd</sup> July, 2015

**Schedule of test**

**THERMAL & DYNAMIC SHORT-CIRCUIT TEST (CONDUCTOR)**

**Test conditions**

<u>Source</u>	Short-circuit generator
Phases	Three
Frequency	50 Hz

Test sample

Condition before test	Good
No. of phases	Three; one end of the cable connected to the source

Test details

Test circuit drawing number	CRTL/SC/STC-03A
Short-circuit applied	On the other end of the cable
Short-circuit point	Grounded

Oscillogram No.	Type of test	Current (kA)		Duration (s)	Conductor temperature prior to the short circuit test (°C)	Observation
		Peak	Rms			
SC15364A.S01	Thermal short-circuit	---	R - 27.53 Y - 27.43 B - 27.57 Average - 27.50*	1.08	29.0 °C	During test: No abnormality
SC15364A.S02	Dynamic short-circuit	72.69 (R-Phase)	---	0.05	28.5 °C	During test: No abnormality
SC15364A.S03	Thermal short-circuit	---	R - 27.32 Y - 27.28 B - 27.36 Average - 27.32**	1.08	29.5 °C	During test: No abnormality

\*Equivalent to 28.58 kA rms for 1.0 s

\*\*Equivalent to 28.39 kA rms for 1.0 s

**Physical Inspection:** No visible external damage to the cable and its terminations and joint.

*[Signature]*  
**Test Engineer**

**CENTRAL POWER RESEARCH INSTITUTE**  
(Member of STL)



**Test Report Number:** SC15364A

**Dated:** 2<sup>nd</sup> July, 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) NABL has Accredited this laboratory as per ISO 17025-2005 standard, vide certificate no.T-0010 for the tests carried out.
- e) 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:**

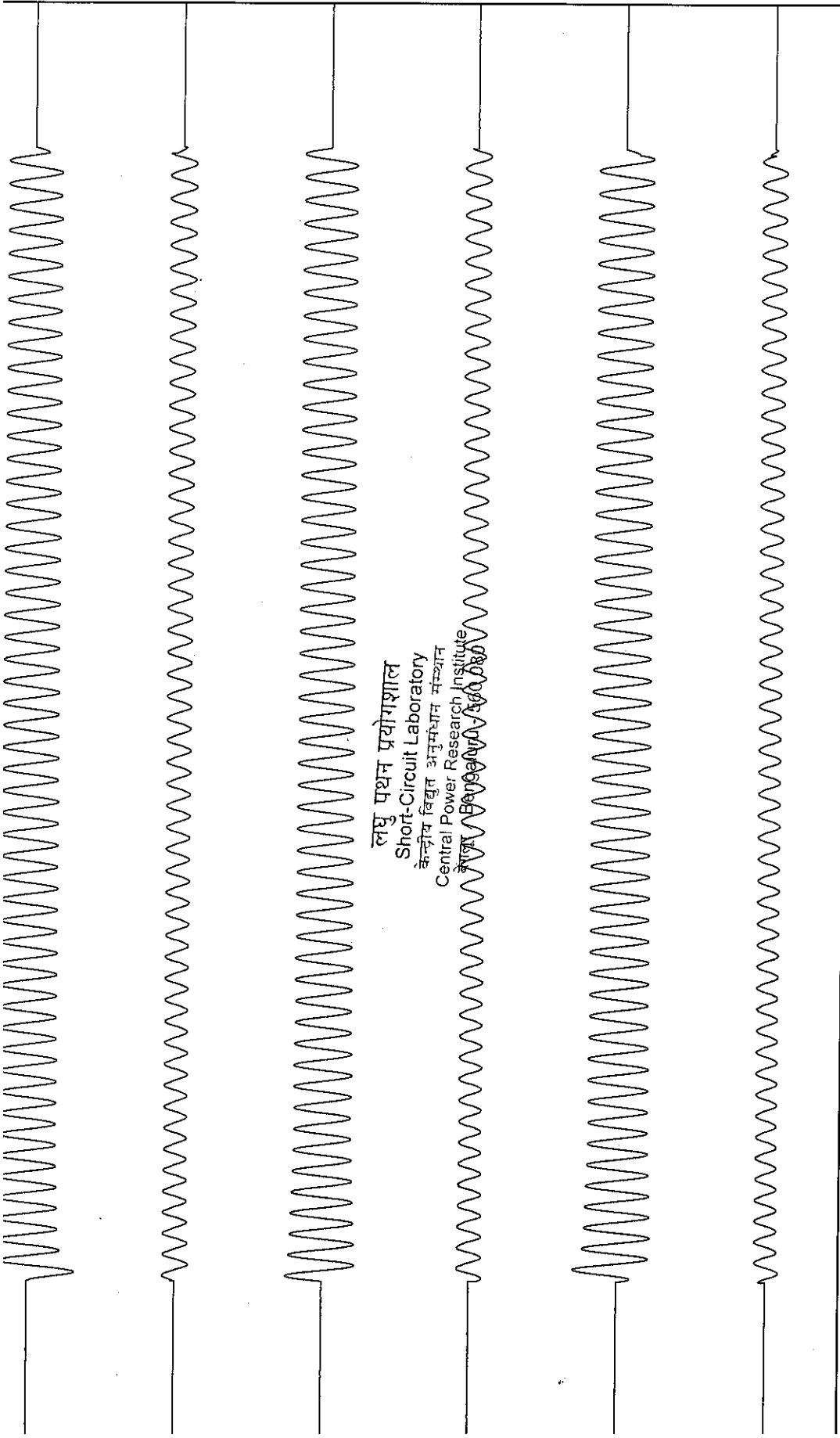
The sealed certificate is issued, on request and payment of the prescribed charges thereof only when the sample of particular type and rating has satisfactorily passed all the specified tests in compliance with the condition stipulated in a published National / International standard.

**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



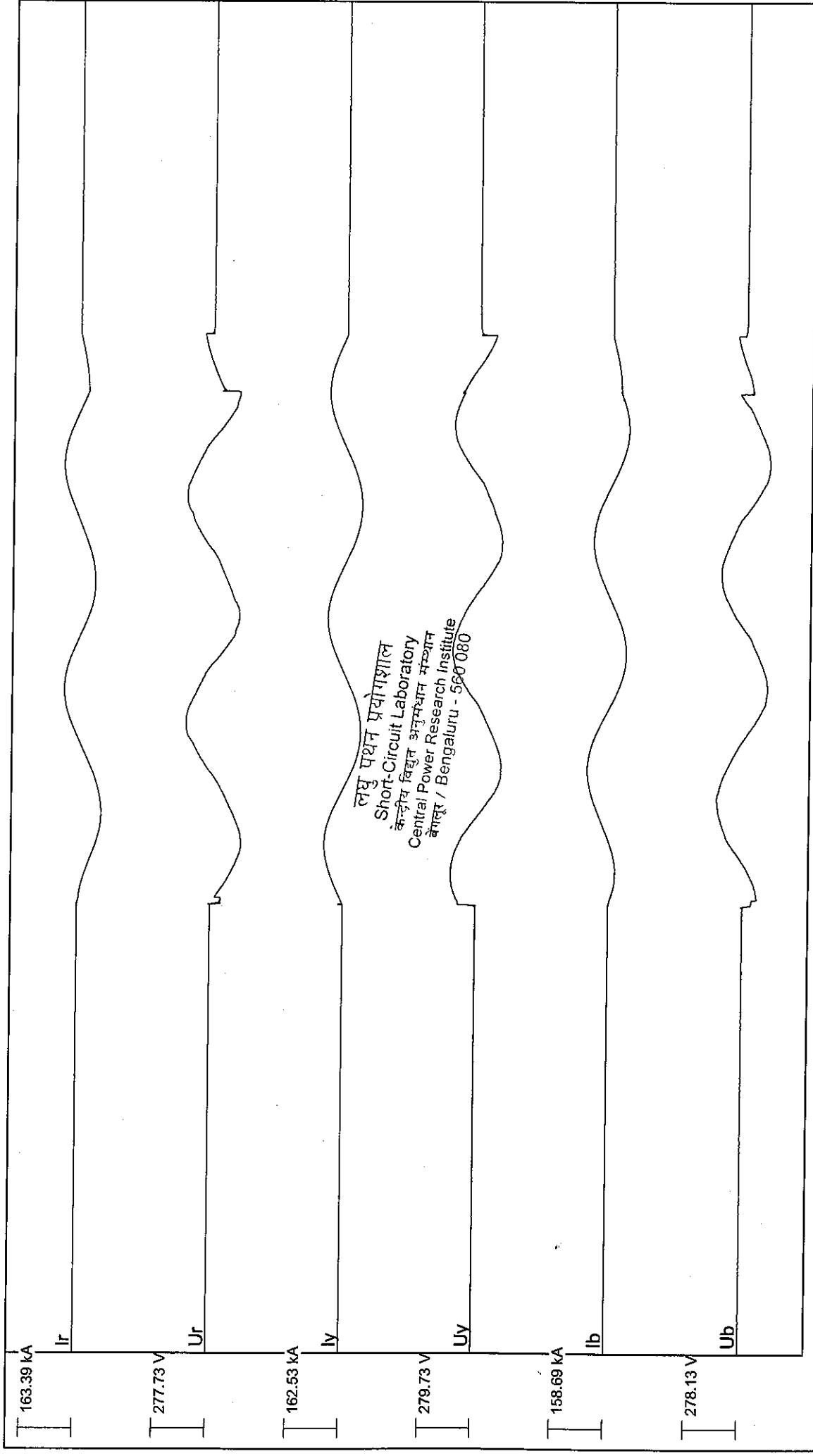


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Short-Circuit Laboratory  
केन्द्रीय विद्युत अनुसंधान संस्थान  
Central Power Research Institute  
बंगलूरु - ५६० ०८०

170.10 milli seconds

*Yentz*  
TEST ENGINEER

SC15364A.S01 Dt: 6/30/2015

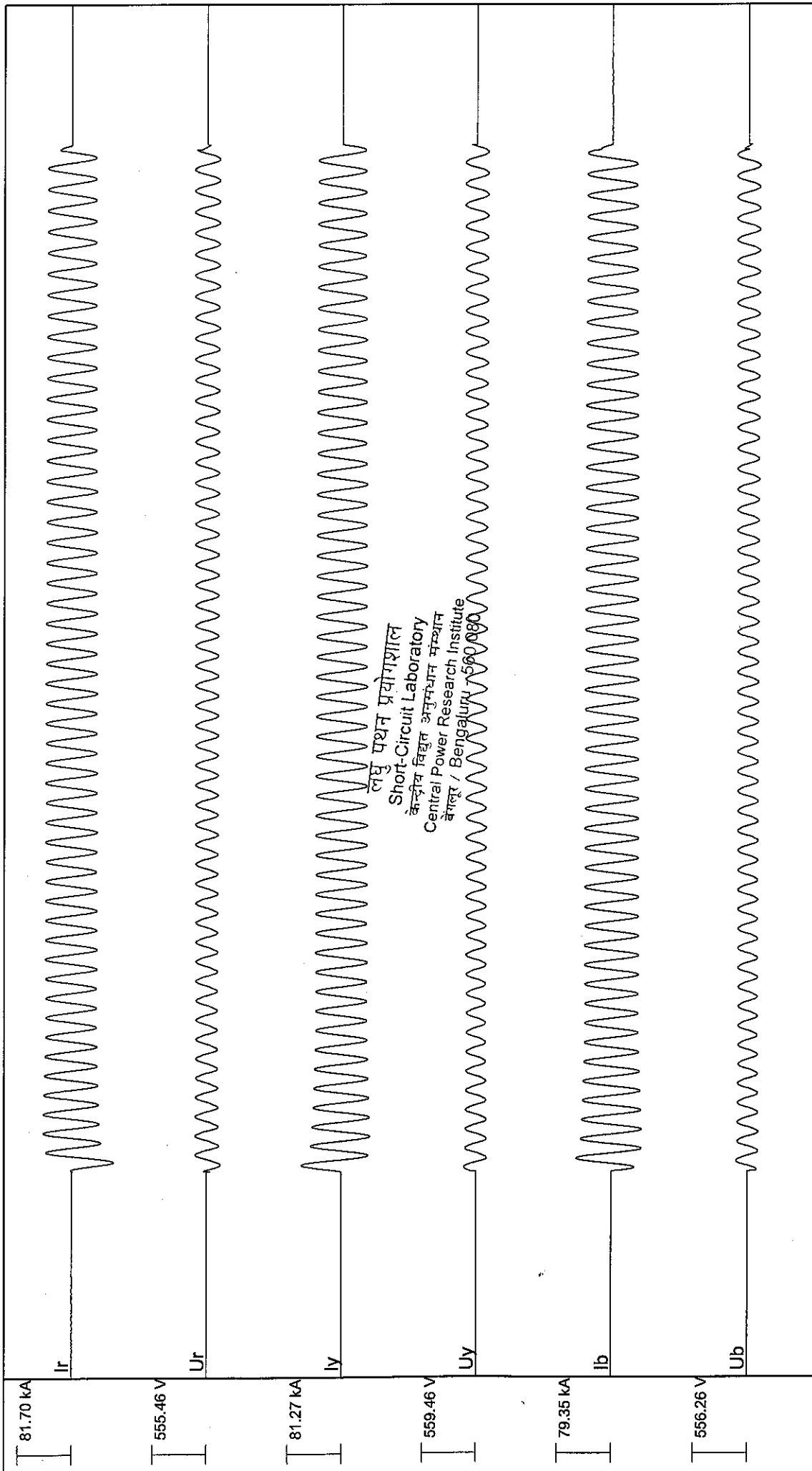


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 Short-Circuit Laboratory  
 केंद्रीय विद्युत अनुसंधान मंदिर  
 Central Power Research Institute  
 बंगलूरु / Bengaluru - 560 080

14.24 milli seconds

  
 TEST ENGINEER





81.70 kA

555.46 V

81.27 kA

559.46 V

79.35 kA

556.26 V

170.10 milli seconds

TEST ENGINEER

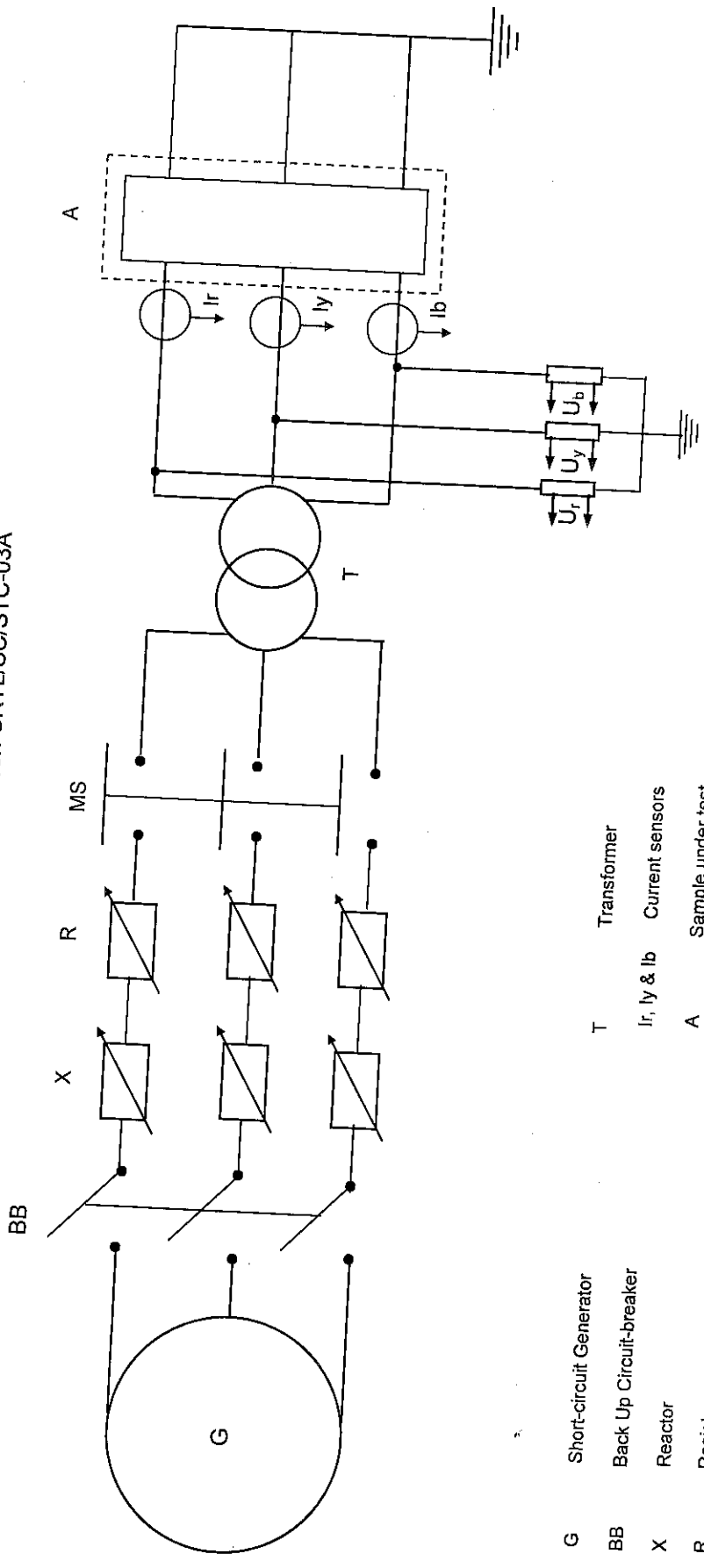
SC15364A.S03 Dt: 7/1/2015



CPRI

### Schematic of main & measurement circuits - Three phase test

Circuit Number: CRTL/SC/STC-03A



- G Short-circuit Generator
- BB Back Up Circuit-breaker
- X Reactor
- R Resistor
- MS Make Switch
- Ur, Uy & Ub Voltage sensors

- T Transformer
- Ir, Iy & Ib Current sensors
- A Sample under test

*Kanb*  
Test Engineer