



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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<b>Code 1</b>	Indicates place where testing is planned to be performed I.e. Inspection location	<b>Code 2</b>	Indicates who has to perform the tests I.e. Testing Agency
A	At Equipment Manufacturer's works	J	The Equipment Manufacturer
B	At Component Manufacturer's works	K	The Component Manufacturer
C	At Authorised Distributor's place	L	The Third Party
D	At Independent Lab	M	The Trunkey Contractor
E	At Turn Key Contractor's location		
F	Not specified		
<b>Code 3</b>	Indicates who shall witness the tests I.e. Witnessign Agency	<b>Code 4</b>	Review of Test Reports/
P	Component Manufacturer itself	W	By Equipment manufacturer
Q	Component Manufacturer and Equipment Manufacturer	X	By Contractor during product/process
R	Component Manufacturer, Equipment Manufacturer and Contractor	Y	By BSPTCL during product/ process inspection
S	Equipment Manufacturer itself	Z	By Contractor and /or BSPTCL during product/process inspection
T	Equipment Manufacturer and contractor		
U	Equipment Mauufacturer, Contractor and BSPTCL		
V	Third Party itself		
<b>Code 5</b>	Whether specific approval of sub-vendor / component make is envisaged?	<b>Code 6</b>	Whether test records required tobe submitted after final inspeciotn for issuance of CIP/MICC
E	Envisaged	Y	Yes
N	Not Envisaged	N	No

**Notes:**

- 1 The MQP should be read in conjunction with BSPTCL specification and shall deem to include additional tests if any required as per the contract.
- 2 BSPTCL specification shall include provisions of letter of Award, BSPTCL approved drawings/technical data sheet/BOM/test schedule/test procedure applicable to the specific contract.
- 3 In case of any contradiction between the Manufacturer's plant standards, this MQP and BSPTCL specification following precedence shall be followed :-
  - a) BSPTCL Specification
  - b) This Manufacturing Quality Plan
  - c) Manufacturer's plant standards
- 4 It is the responsibility of the manufacturer to ensure that this document is readily available at their works, as well as at the works of their sub vendors in order to avoid any delay at the time of inspection.
- 5 The manufacturer shall ensure that their as well as their sub vendors control, metering & testing instruments are duly calibrated and should have calibration certificates traceable to Indian/International Standards. Calibration records should be available during inspection by BSPTCL. All testing instruments will be calibrated by NABL accredited laboratories.
- 6 In case of any tests being carried out at third party lab, such lab / facility should be NABL accredited / accepted by BSPTCL.
- 7 Witnessing of Acceptance Tests by BSPTCL shall be on 25% of the number of samples for acceptance test. The Contractor or Equipment Manufacturer will inform in advance the serial number of equipment/items being offered for inspection selective from each category like Bus-bar, Line Protn, Control panels, etc. so that BSPTCL can inform in advance to keep the selected samples ready for witnessing.
- 8 The manufacturer shall maintain the proper co-relation of test certificates from raw material stage to finished product stage and the records should be available during inspection by BSPTCL.

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- 9 Manufacturer shall show the approval of BSPTCL engineering for all contract specific type tests, including specific type tests if any as per the BSPTCL specification, at the time of final inspection.
- 10 All packing cases should be marked with BSPTCL LOA Detail, Name of project, Item description and despatch clearance/instructions number ( by which material has been cleared for dispatch ) .
- 11 One copy of test report, despatch clearance/instructions shall also be sent along with consignment.
- 12 Inspection of spare items ordered by BSPTCL shall also be governed by the provisions of this MQP. Items if not governed under MQP shall be offered for inspection as per BSPTCL specifications / Relevant – Indian / International Specification .
- 13 Any material rejected during BSPTCL inspection shall be disposed off with the approval of BSPTCL. For destructive disposal BSPTCL may depute its representative for witnessing. In case the material is to be returned to sub-vendor, all such items shall be indelibly marked ( to prevent mixing ) at the works of the manufacturer and offered to BSPTCL inspector for verification of marking.
- 14 The manufacturer shall align their quality system and that of their sub-vendors to the requirements of latest ISO 9000 quality standards in a time bound manner.
- 15 The list of component manufacturers for which sub-vendor approval are envisaged herewith.
- 16 BSPTCL may review the effective implementation of the processes during the product-inspection / process -inspection. In case any violation in process or process parameters are observed, the reason along with corrective & preventive measures shall be conveyed to BSPTCL within 2 weeks.
- 17 The out-sourced activity shown in the process flow diagram shall also be in the ambit of process-inspection by BSPTCL
- 18 Any addition / change in new vendor / design / process shall call for review by BSPTCL and change in MQP, if necessary.
- 19 Welding qualification of vendors to be checked periodically during inspection.

EM: Equipment Manufacturer

CM: Component Manufacturer

TC: Test Certificates



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SR. NO.	Components/Operations & Description of Test	Type of Check	Quantum of Check / Sampling with basis	Reference Document for Testing	Acceptance Norms	Format of Records	Applicable Code						Remark
							1	2	3	4	5	6	

**A. RAW MATERIAL INSPECTION**

**1.1 AIR CIRCUIT BREAKER**

							<b>E</b>						
	1.Check current rating & Voltage	Visual	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	2. Mech. Operation	Mechanical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	Review of CMTC/EMTC during BSPTCL inspection.
	3.H.V. Main & Aux.Ckt.	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	4. M.V. Drop test at 100A DCACB Rating up to 4000A	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	5.Interchangability	Mechanical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	6. Slow Closing	Mechanical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	7. Antipumping/ Trip free feature	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	8. Interlock closing & tripping	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	9. Closing &Triping time	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	
	10. Calibration of releases	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 13947/Part -2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W/Z		N	



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**1.2 AIR BREAK SWITCH FUSES/ SWITCHES** **E**

	1.Check current rating & Voltage	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS13947 Part -3 / (Power Grid Specn./ Mfr's Catalogue / Appd. Drg	CMTC	B	K	P	W	N	
	2. M.V. Drop	Electrical	100%	BSPTCL Specn / Approd. Drg.	IS13947 Part -3 / (Power Grid Specn./ Mfr's Catalogue / Appd. Drg	CMTC	B	K	P	W	N	
	3. Operational check	Electrical	100%	BSPTCL Specn / Approd. Drg.	IS13947 Part -3 / (Power Grid Specn./ Mfr's Catalogue / Appd. Drg	CMTC	B	K	P	W	N	

**1.3 FUSES** **E**

	1.Check current rating & voltage	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13703/Part -1&2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W	N	
	2.Mounting Details	Mechanical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order/ Mfrs, Catalogue.	IS 13703/Part -1&2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W	N	Review of CMTC/EMTC during BSPTCL inspection.
	3.Continuity	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13703/Part -1&2 / Mfr's Catalogue/BSPTCL Specen./Approd. Drgs./Data sheet	CMTC	B	K	P	W	N	

**1.4 AIR BREAK CONTACTORS** **E**

	1. Voltage/Current rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -4 / Mfr's Catalogue/BSPTCL Specen	CMTC	B	K	P	W	N	
	2. H.V. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -4 / Mfr's Catalogue/BSPTCL Specen	CMTC	B	K	P	W	N	
	3. I.R. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -4 / Mfr's Catalogue/BSPTCL Specen	CMTC	B	K	P	W	N	
	4. Operation Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -4 / Mfr's Catalogue/BSPTCL Specen	CMTC	B	K	P	W	N	



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**1.5 AIR BREAK AUX. CONTACTORS**

**E**

1. Voltage/Current rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W/Z		N	
2. H.V. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W/Z		N	
3. I.R. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W/Z		N	
4. Operation Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W/Z		N	

**1.6 OVERLOAD RELAY WITH SINGLE PHASING PREVENTOR FACILITY**

**E**

1. Range	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -4/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W/Z		N	
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**1.7 TIMERS**

**E**

1. Voltage/Current rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -5 / Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W		N	Review of CMTC/EMTC during BSPTCL inspection.
2. H.V. Test	Electrical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -5 / Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W		N	
3. I.R. Test	Electrical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 13947/Part -5 / Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W		N	
4 Functional Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W		N	
5. Time range, Pick-up & Time range up Drop-off	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947/Part -5/ Mfr's Catalogue/BSPTCL Specn.	CMTC	B	K	P	W		N	

**1.8 CURRENT TRANSFORMER**

**E**

1. Terminal Marking & Polarity	Electrical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 2705/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
2. H. V Test	Electrical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 2705/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
3. Functional Test/Ratio test	Electrical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 2705/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
4. Routine Test	Electical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 2705/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	

**1.9 POTENTIAL TRANSFORMER**

**E**

1. Terminal Marking & Polarity	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 3156/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
2. H. V Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 3156/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
3. Functional Test/Ratio test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 3156/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	
4. Routine Test	Electical	100%	BSPTCL Specn/Approd. Drg.	IS 3156/ Part-1 to 4/BSPTCL specn./Approd. Drg.	CMTC	B	K	P	W/Z		N	





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<b>1.14 CURRENT OPERATED RELAY</b>												
E												
	Continuity Check	Electrical	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	High voltage test in Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	Visual check	Visual	100%	BSPTCL Specn/ Approd. Drg/As per P.O.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
<b>1.15 VOLTAGE OPERATED RELAY</b>												
E												
	Check for healthiness	Visually	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	High voltage test in Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	Visual check	Visual	100%	BSPTCL Specn/ Approd. Drg/As per P.O.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
<b>1.16 TRIP CIRCUIT SUPERVISION RELAY</b>												
E												
	Functional check	Electrical	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	Indication check	Electrical	100%	BSPTCL Specn/ Approd. Drg.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	HV test for 2 kV for 1 min. in panel assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg/As per P.O.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
	Routine Test	Electrical	100%	BSPTCL Specn/ Approd. Drg/As per P.O.	IS 3231 / IEC 255	CMTC	B	K	P	W	Y	
<b>1.17 INDICATING LAMPS</b>												
E												
	1. Visual Check including voltage rating	Visual	100%	BSPTCL Specn/Approd. Drg. / Purchase Order	IS 4795/BSPTCL Approd. Drg.	CMTC	B	K	P	W	N	Review of CMTC/EMTC during BSPTCL inspection.
	2. Dimensions	Mechanical	10%	BSPTCL Specn/Approd. Drg. / Mfrs Catalogue.	IS 4795/BSPTCL Approd. Drg.	CMTC	B	K	P	W	N	
	3. Operations	Electrical	100%	BSPTCL Specn/Approd. Drg. / Purchase Order	IS 4795/BSPTCL Approd. Drg.	CMTC	B	K	P	W	N	
	H.V. Test	Electrical	100%	BSPTCL Specn/ Approd. Drg/As per P.O.	IS 3231 / IEC 255	CMTC	B	K	P	W	N	
<b>1.18 PUSH BUTTONS</b>												
E												
	1. Voltage & Current Rating	Visual	100%	BSPTCL Specn/Approd. Drg. / Purchase Order	IS 6875/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	2. Connection Arrangements	Visual	100%	BSPTCL Specn/Approd. Drg. / Mfrs Catalogue.	IS 6875/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	3. Dimensions	Mechanical	10%	BSPTCL Specn/Approd. Drg. / Mfrs Catalogue.	IS 6875/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	4. Operations	Electrical	100%	BSPTCL Specn/Approd. Drg. / Mfrs Catalogue.	IS 6875/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
<b>1.19 SPACE HEATER</b>												
E												
	1. visual check including voltage/ Wattage rating	Visual	100%	BSPTCL Specn/Approd. Drg. / Purchase Order	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	2. Power Consumption	Electrical	100%	BSPTCL Specn/Approd. Drg. / Mfrs Catalogue.	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	



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<b>1.20 THERMOSTAT</b>												
<b>E</b>												
1.	Rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
2.	Functional test	Electrical	100%	BSPTCL Specn/Approd. Drg.	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
<b>1.21. PLUG SOCKET AND SWITCH</b>												
<b>E</b>												
	Visual check	Visual	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per P.O	CMTC	B	K	P	W	N	Review of CMTC/EMTC during BSPTCL inspection.
	HV Test in Control Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	As per Dwg.	CMTC	B	K	P	W	N	
	IR value in Control Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	As per Dwg.	CMTC	B	K	P	W	N	
<b>1.22 HOOTERS</b>												
<b>E</b>												
	1. Dimensions	Mechanical	100%	BSPTCL Specn/Approd. Drg./ Purchase Order / mfrs. Catalogue	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	2. Rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	3. Functional test	Electrical	100%	BSPTCL Specn/Approd. Drg.	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
<b>1.23 CONTROL / SELECTOR SWITCHES</b>												
<b>E</b>												
	1. Voltage rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 6875/IS13947/ Part- 5/PGCIL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	2. Contact arrangement	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order / mfrs. Catalogue	IS 6875/IS13947/ Part- 5/PGCIL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	3. Functional Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 6875/IS13947/ Part- 5/PGCIL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
<b>1.24 TERMINAL BLOCKS</b>												
<b>E</b>												
1	HV & IR test	Electrical	100%	BSPTCL Specn/Approd.	IEC 60947-7-1	CMTC	B	K	P	W	N	
	1. Visual check including Type	visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	





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<b>1.25 MOULDED CASE CIRCUIT BREAKER</b>												
<b>E</b>												
	1. Dimensions	Mechanical	2 nos. / Lot	BSPTCL Specn/Approd. Drg./ Purchase Order / mfrs. Catalogue	IS 13947 Part -2 /BSPTCL Specn/ Mfr's cat..	CMTC	B	K	P	W	N	Review of CMTC/EMTC during BSPTCL inspection.
	2. Voltage / Current Rating	Visual	100%	BSPTCL Specn/Approd. Drg.	IS 13947 Part -2 /BSPTCL Specn/ Mfr's cat..	CMTC	B	K	P	W	N	
	3. Functional Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 13947 Part -2 /BSPTCL Specn/ Mfr's cat..	CMTC	B	K	P	W	N	
<b>1.26 MINIATURE CIRCUIT BREAKER</b>												
<b>E</b>												
	1 . Voltage / Current Rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 8828 /BSPTCL Specn/ Mfr's cat..	CMTC	B	K	P	W	N	
	2. Functional Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 8828 /BSPTCL Specn/ Mfr's cat..	CMTC	B	K	P	W	N	
<b>1.27 ANNUNCIATOR</b>												
<b>E</b>												
	1. Dimensions	Mechanical	2 nos. / Lot	BSPTCL Specn/Approd. Drg./ Purchase Order / mfrs. Catalogue	BSPTCL Specn/ Mfr's cat./ Apprd. Drg.	CMTC	B	K	P	W	N	
	2. Rating	Visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	BSPTCL Specn/ Mfr's cat./ Apprd. Drg.	CMTC	B	K	P	W	N	
	3. Functional Test	Electrical	100%	BSPTCL Specn/ Mfr's cat./ Apprd. Drg.	BSPTCL Specn/ Mfr's cat./ Apprd. Drg.	CMTC	B	K	P	W	N	
<b>1.28 CONTROL TRANSFORMER</b>												
<b>E</b>												
	1. Rating	visual	100%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 12021/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	2. Output	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 12021/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	3. I.R. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 12021/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	4. H.V. Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 12021/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

		Customer : BSPTCL	Vendor's Code:		Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of					
	5. Routine Test	Electrical	100%	BSPTCL Specn/Approd. Drg.	IS 12021/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
<b>1.29 TRANSducers (IF APPLICABLE)</b>												
E												
a.	Visual check (Range)	Visual	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Apprd. Drg	CMTC	B	K	P	W/Z	N	Review of CMTC/EMTC during BSPTCL inspection.
c.	HV Test in Control Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Apprd. Drg	CMTC	B	K	P	W/Z	N	
d.	Operational Test in Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Apprd. Drg	CMTC	B	K	P	W/Z	N	
<b>1.30. MIMIC STRIP</b>												
N												
a.	Visual check for color & symbol	Visual	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Dwg.	CMTC	B	K	P	W	N	
b.	Dimensional check	Mechanical	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Dwg.	CMTC	B	K	P	W	N	
<b>1.31 SEMAPHORE</b>												
E												
a.	Visual check / type and rating check	Visual	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Dwg.	CMTC	B	K	P	W	N	
b.	Functional Test in Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	As per Dwg.	CMTC	B	K	P	W	N	
c.	High voltage test in Panel Assly.	Electrical	100%	BSPTCL Specn/ Approd. Drg.	As per Dwg.	CMTC	B	K	P	W	N	
<b>1.32 HARDWARES</b>												
E												
	1. Visual check	visual	10%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 1364/ IS 1367/ IS 2016/ IS2389/BSPTCL Specn.	CMTC	B	K	P	W	N	
	2. Size	visual	10%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 1364 / BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W	N	
	3. Plating	Visual	10%	BSPTCL Specn/Approd. Drg./ Purchase Order	IS 1364 / BSPTCL Specn.	CMTC	B	K	P	W	N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**1.33 SHEET STEEL (CRCA / HRCA), ANGLES & CHANNELS ETC. E**

	1. Dimensional conformity incl. Thickness	Mechanical	10%	BSPTCL Specn/Apprd.Drg./As per PO	IS 513 (CRCA), IS 1079 (HRCA) / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	Review of CMTC/EMTC during BSPTCL inspection.
	2.Surface Finish and visual check	Visual	100%	BSPTCL Specn/Apprd.Drg.	IS 513 (CRCA), IS 1079 (HRCA) / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	3.Chemical Composition	Chemical	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	IS 513 (CRCA), IS 1079 (HRCA) / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	4. Mechanical / Physical Properties	Visual	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	IS 513 (CRCA), IS 1079 (HRCA) / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	

**1.34 Aluminium Sheet**

	1. Dimensional conformity incl. Thickness	Mechanical	10%	BSPTCL Specn/Apprd.Drg./As per PO	IS 737 / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	Review of CMTC/EMTC during BSPTCL inspection.
	2.Surface Finish and visual check	Visual	100%	BSPTCL Specn/Apprd.Drg.	IS 737 / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	3.Chemical Composition	Chemical	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	IS 737 / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	4. Mechanical / Physical Properties	Visual	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	IS 737 / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	

**1.35 Stainless Steel Sheet**

	1. Dimensional conformity incl. Thickness	Mechanical	10%	BSPTCL Specn/Apprd.Drg./As per PO	ASTM A240/A240M-11b & ASME SA240/SA240M-11a / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	Review of CMTC/EMTC during BSPTCL inspection.
	2.Surface Finish and visual check	Visual	100%	BSPTCL Specn/Apprd.Drg.	ASTM A240/A240M-11b & ASME SA240/SA240M-11a / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	3.Chemical Composition	Chemical	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	ASTM A240/A240M-11b & ASME SA240/SA240M-11a / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	
	4. Mechanical / Physical Properties	Visual	1No/ lot	BSPTCL Specn/Approd. Drg./As per PO	ASTM A240/A240M-11b & ASME SA240/SA240M-11a / BSPTCL Specn/Apprd.Drg.	CMTC	B	K	P	W/Z		N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**1.36 ALLUMINIUM BUSBARS** **E**

	1. Dimensions	Mechanical	100%	BSPTCL Specn/Apprd.Drg./As per PO	IS 5082/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	2. Surfce Finish	Visual	100%	BSPTCL Specn/Apprd.Drg.	IS 5082/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	3. Chemical Composition	Chemical	1No/ lot	BSPTCL Specn/Apprd.Drg.	IS 5082/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	4. Physical Properties Test	Mechanical	1No/ lot	BSPTCL Specn/Apprd.Drg.	IS 5082/BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	

**1.37 COPPER BUSBARS** **E**

	1. Dimensions	Mechanical	100%	BSPTCL Specn/Apprd.Drg./As per PO	IS 613:2006/IS 1897 / BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	2. Surfce Finish	Visual	100%	BSPTCL Specn/Apprd.Drg.	IS 613:2006/IS 1897 / BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	3. Chemical Composition	Chemical	1No/ lot	BSPTCL Specn/Apprd.Drg.	IS 613:2006/IS 1897 / BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	
	4. Physical Properties Test	Mechanical	1No/ lot	BSPTCL Specn/Apprd.Drg.	IS 613:2006/IS 1897 / BSPTCL Specn/Approd. Drg.	CMTC	B	K	P	W/Z			N	

**1.38. EARTH BUSBARS** **N**

	Dimensional	Mechanical	1/ Lot	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Apprd. Dwg.	CMTC	B	K	P	W			N	Review of CMTC/EMTC during BSPTCL inspection.
	Visual check	Visual	100%	BSPTCL Specn/ Approd. Drg./ As per P.O	As per Apprd. Dwg.	CMTC	B	K	P	W			N	

**1.39 INSULATOR FOR BUSBARS (SHEET MOULDED COMPUND / DOUGH MOULDING COMPOUND)** **E**

	1. Dimensions	Mechanical	100%	BSPTCL Specn/Apprd.Drg./As per PO	IS 2824/BS 2782/ BS 3840/BSPTCL Specn/Approd. Drg./ Mfr's cat	CMTC	B	K	P	W			N	
	2. Surface Finish	Visual	100%	BSPTCL Specn/Apprd.Drg.	IS 2824/BS 2782/ BS 3840/BSPTCL Specn/Approd. Drg./ Mfr's cat	CMTC	B	K	P	W			N	
	3. Chemical Composition	Chemical	100%	BSPTCL Specn/Apprd.Drg.	IS 2824/BS 2782/ BS 3840/BSPTCL Specn/Approd. Drg./ Mfr's cat	CMTC	B	K	P	W			N	
	4. Physical Properties Test	Mechanical	100%	BSPTCL Specn/Apprd.Drg.	IS 2824/BS 2782/ BS 3840/BSPTCL Specn/Approd. Drg./ Mfr's cat	CMTC	B	K	P	W			N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**1.40 RUBBER GASKET** **E**

Sl. No.	Description	Material	Quantity	Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	Remarks
1.	Dimensions & Visual check	Mechanical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC						
2.	Hardness Before Ageing	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
3.	Tensile Strength Before Ageing	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
4.	Elongation at Breaking point Before Ageing.	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	Review of CMTC/EMTC during BSPTCL inspection.
5.	Change in Hardness After Ageing	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
6.	change in Tensile Strength After Ageing	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
7.	Change in Elongation at Breaking point After Ageing.	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
8.	Copression Set	Mechanical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	IS:11149 / IS:3400 BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	
9.	Polymer Identification Test	Chemical	1 Sample / Lot	BSPTCL Specn/Approd. Drg./Mfr's cat.	BS 4181 / equiv. BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W	N	

**1.41 POWDER (For coating)** **N**

Sl. No.	Description	Material	Quantity	Specn/Approd. Drg./Mfr's cat.	IS 5 / RAL	CMTC	B	K	P	W	N	Remarks
1.	Powder Shade	Visually	1 x Drum per batch %	As per P.O	IS 5 / RAL	CMTC	B	K	P	W	N	
2.	Powder type	Visually	100%	As per Manufacturer's TC	IS 5 / RAL	CMTC	B	K	P	W	N	
3.	All Routine Test	Chemical	100%	As per Manufacturer's TC	IS 5 / Apprd. Drg/Power Grid specn.	CMTC	B	K	P	W	N	

**1.42. NAME PLATES** **N**

Sl. No.	Description	Material	Quantity	Specn/Approd. Drg./Mfr's cat.	As per Appro. Dwg.	CMTC	B	K	P	W	N	Remarks
	Dimentional check	Mechanical	1/ Lot	As per P.O	As per Appro. Dwg.	CMTC	B	K	P	W	N	
	Visual check	Visual	100%	As per Appro. Dwg.	Waviness Free Surface Finish	CMTC	B	K	P	W	N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**1.43 PVC INSULATED CABLES / WIRES** E

Conductors						B	K	P	W		N
Diameter check	Mechanical	5 / Lot	As per P.O	IS 694	CMTC	B	K	P	W		N
High voltage test at 2.5kV for 1 min.	Electrical	100%	As per Approd. Dwg.	IS 694	CMTC	B	K	P	W		N
Visual check	Visual	100%	As per P.O	IS 694	CMTC	B	K	P	W		N
Check for Thickness of Insulation & Over all Dimensions	Mechanical	5 / Lot	As per P.O/Supplier Specn.	IS 694	CMTC	B	K	P	W		N
Flamability Test( When Required)	Visual	1/Lot	As per P.O/Supplier Specn.	IS 694	CMTC	B	K	P	W		N
Water Immersion Test	Electrical	1/Lot	As per P.O/Supplier Specn.	IS 694	CMTC	B	K	P	W		N

**1.44 LIGHTING TRANSFORMER ( DRY TYPE) to be accepted after CIP at Sub Vendors works** E

1. Dimensions	Visual	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
2. IR Test	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
3. H. V Test ( Di electric Test )	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
4. Winding Resistance Test	Electrical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
5. No Load loss & current Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
6. Voltage Ratio Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
7. Induced Overvoltage Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
8.Vector Group Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
9 Short Circuit / Load Losses Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
10. No Inpedence Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
12. Regulation / Efficiency at 100% UPF (%)	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP	A	J	U	Y		N
13. Temp Rise Test	Electical	100%	BSPTCL Specn./Approd. Drg./ Purchase Order	IS 11171/ IS 2026 /BSPTCL specn./Approd. Drg.	CMTC/ PGCIL CIP/ Type Test Report	A	J	U	Y		N



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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<b>1.45 Battery Charger</b>												
<b>E</b>												
1. Visual check	Visual	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	
2. Insulation Resistance Test.	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	Review of CMTC/EMTC during BSPTCL inspection.
3. H.V. Test	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	
4. Voltage Regulation Test ( Boost)	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	
5. Voltage Regulation Test ( Trickle / Flot)	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	
5. Check No load AC Current	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	
6. Check Full load AC Current	Electrical	100%	BSPTCL Specn/Approd. Drg./Mfr's cat.	BSPTCL Specn/Approd. Drg./Mfr's cat.	CMTC	B	K	P	W		N	

**B.- IN PROCESS INSPECTION**

<b>2.1 FABRICATED CUBICAL / COMPONENTS (IN HOUSE FABRICATION)</b>												
<b>N</b>												
1. Dimensions	Visually	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
2. Lifting facility	Visual	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
3. Cable entry	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
4. Straightness	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
5. Waviness	Visual	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	Review of CMTC/EMTC during BSPTCL inspection.
6. Gasket fixing arrangements	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
7. Deburring	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
8. Welding	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	
9. Removal of welding stags	Mechanical	100%	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	MS Fab. Drgs / MS QA Manual / BSPTCL apped. Drg./ Specn.	CMTC	A	J	S	W/Z		N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**2.2 PRE-TREATMENT / FINAL PAINTING / POWDER COATING (IN HOUSE) for MS (for CRCA/ HRCA)**

**N**

**A) PRE-TREATMENT FOR CRCA / HRCA SHEET**

1. Hot Degreasing TANK NO. 1 ( Concentration 5% W/V.) 10 to 15 min. Temp of Bath: 65 to 75 deg. C	Chemical	100%	WI : PRD : 02 to 04	IS 6005 / BSPTCL specfn./ Apprd. Drg/MS powder coating procedures per WI : PRD : 02 to 04	MSQC RECORD	A	J	S	W	N	N
2. Water Rinse TANK NO. 2 & 3	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
3. De - Rusting TANK NO. 4 (Concentration 25 % V/V.) 15 to 20 min	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
4. Water Rinse TANK NO. 5 & 6	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
5. Activation TANK NO. 7 (Concentration 0.06 to 0.1% W/V) 45 Sec. to 60 Sec.	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
6. Hot Phosphating TANK NO. 8 (Concentration 3% V/V) 10 to 15 min. Temp of Bath: 65 to 70 deg.C	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
7. Water Rinse TANK NO. 9	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N
8. Hot Pressivation TANK NO.10 (Concentration 1 % V/V) Deeping time 1 to 2 min. Temp of Bath: 60 to 65 deg.C	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N

**B) PRE-TREATMENT FOR ALUMINIUM SHEET**

1. Degreasing cum Phosphating (1st Tank) (Concentration 10~12% V/V) Deeping time 5 to 10 min. Temp. of Bath: Ambient.	Chemical	100%	WI : PRD : 13 & 14	BSPTCL specfn./ Apprd. Drg/MS powder coating procedures per WI : PRD : 02 to 04	MSQC RECORD	A	J	S	W	N	N
2. Water Rinse (2nd Tank)	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N

**C) PRE-TREATMENT FOR GI & Hot Dip Galvanized Sheet**

1. GI Chemical (1st Tank) Deeping time 4 to 6 min.	Chemical	100%	WI : PRD : 11 & 12	BSPTCL specfn./ Apprd. Drg/MS powder coating procedures per	MSQC RECORD	A	J	S	W	N	N
2. Water Rinse (2nd Tank)	Chemical	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	N





**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

		Customer : BSPTCL	Vendor's Code:		Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of					
<b>D) FINAL PAINTING / POWDER COATING</b>												
	Powder coating application	Electrostatic	100%	----do----	----do----	MSQC RECORD	A	J	S	W	N	
	1. Paint shade	Visually	1 x sample form batch	As per P.O	As per IS 5 / RAL	MSQC RECORD	A	J	S	W	N	
	2. Surface finish	Visually	1 x sample form batch	---	As per maktel plant std.	MSQC RECORD	A	J	S	W	N	Review of CMTC/EMTC during BSPTCL inspection.
	3. Thickness of coating	Mechanical	2 / Lot	Customer's speciation / Approved Dwg.	IS 13871/ Customer's speciation/ Approved Dwg.	MSQC RECORD	A	J	S	W	N	
	4. Scratch Test	Mechanical	Random quantity depending on Lot	---	ASTM D 3359 / As per maktel plant std.	MSQC RECORD	A	J	S	W	N	
<b>2.3 BUSBAR MOUNTING</b>						<b>N</b>						
	1. Size of Busbar	Mechanical	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	2. Busbar Finish	Visually	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	3. Color coding	Visually	100%	Customer's speciation / Approved Dwg.	IS 11353 / Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	4. Tightness of joints	Mechanical	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	5. Clearence	Mechanical	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	6. Support arrangement	Mechanical	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	7. Petro-jelly at joint	Visually	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	
	8. Earth Bus	Mechanical	100%	Customer's speciation / Approved Dwg.	IS 375/Fab. Drg/BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W	N	



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T. PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**C. - INSPECTION AND TESTING ( BEFORE FINAL INSPECTION )**

C1. ROUTINE TEST ( L.T., PANELS, DISTRIBUTION BOARDS ETC. )				N											
1. Check arrangement./ layout of Component	Visually	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
2. C.T Mounting/ Arrangement of components.	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
3. C.T shorting links provision	Visually	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N	review of MSQC report during	
4. Wire clamping/ Ferruling	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N	BSPTCL inspection.	
5. Termination for power and control cables	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
6. Interconnection between components	Electrical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
7. Lugs Size & Crimping	Visually	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z	N	N				
8. Busbar tappings	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
9. Earthing of Trolley	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
10. Door earthing (for doors with components)	Electrical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
11. Component Identification	Visually	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		
12. Wire Sizes	Mechanical	100%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	MSQC RECORD	A	J	S	W/Z				N		



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

	Customer : BSPTCL	Vendor's Code:	Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS	M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of
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**D1. FINAL INSPECTION - L.T. PANELS, DISTRIBUTION BOARD ETC. N**

a	Visual check for basic assly.	Visual	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
c	Door Alignment &Gasketing	Visual	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
d.	Door Earthing	Visual	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
e.	Visual check for mounting of all equipments and terminal block marking	Visually/ Mechanically	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
f.	Verification of Bill of Material	Visually	100% / 25%	BSPTCL Spec./ Apprd. Drg.	As per Drawing	EMTC	A	J	T/U	W/Z		N
g	Interchangeability of Modules	Mechanical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
h	Completeness of wiring/ completeness of panel	Visually	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
l	Tightness of busbar joints by torque Wrench	Mechanical	At Random assable joint	<b>Hardware Torque Size (Kg Fm)</b> M6 0.3-0.7 M8 1.25-2.5 M10 2.5-4.0 M12 4.3-7.1		EMTC	A	J	T/U	W/Z		N



**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS**

		Customer : BSPTCL		Vendor's Code:		Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS		M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016		Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of		
j	Terminal arrangement/ spare Terminals , earthing & earth bus dimensions & general appearance	Visually	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
k	Busbar support & clearance including clearance of drawout modules	Visually	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
l	Continuity of Ckt.	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
m	Operation and scheme test for all Relays, Meters, Annunciations etc	Electrical	100% / 25%	As per Dwg.	As per Dwg. / IS 8623	EMTC	A	J	T/U	W / Z	N	
n	Operation test (electrical control interlock and sequential operation)	Electrical	100% / 25%	As per Drawing	As per Drawing	EMTC	A	J	T/U	W / Z	N	CIP
o	Current injection test on all instruments /	Electrical	100% / 25%	As per Drawing	As per Dwg. / IS 8623	EMTC	A	J	T/U	W / Z	N	CIP
p	Oprations of instruments	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
q	Electrical/ Mechanical interlock	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
r	H.V. Test	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
s	IR ( Before & After HV Test )	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	
t	Paint Thickness	Mechanical	Sample	BSPTCL Spec./ Apprd. Drg.	IS 13871 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z	N	



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		Customer : BSPTCL		Vendor's Code:		Item: L.T PANELS, DIST. BOARDS/BOXES, PCC,MCC , AUXILLARY PANELS		M.Q.P No.: 026 Rev.No.: 00 Date: 04.01.2016			Valid From: 15.01.2016 Valid Upto: Till Revision Page no. 1 of	
ii	Paint Adhesion	Mechanical	Sample	BSPTCL Spec./ Apprd. Drg.	IS 101 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
u	Space Heater function	Electrical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	IS 8623/IS13947 / BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
v	Degree of Protection - Paper insertion	Mechanical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
w	Shipping section alignment	Mechanical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
x	Welding Quality check	Visual	100% / 25%	BSPTCL Spec./ Apprd. Drg.	BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
y	Check for CIP of Lighting transformer	Visual	100%	BSPTCL Spec./ Apprd. Drg.	BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N
z	Check of Over aii dimension	Mechanical	100% / 25%	BSPTCL Spec./ Apprd. Drg.	BSPTCL Spec./ Apprd. Drg.	EMTC	A	J	T/U	W/Z		N

**D. PRE DISPATCH INSPECTION**

	a) Paint Touch-up at the place where Scratch Test is made.	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	W	--	--
	b) Panel to be packed properly	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	W	--	--
	c) Panels to be bound separately at base	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	W	--	--
	d) Plastic Wrapping	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	W	--	--
	e) Final crating	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	W	--	--
	f) Marking outside "FRAGILE HANDLE WITH CARE"	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	w	--	--
	g) Mark " TOP" also by Symbol	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	w	--	--
	h) Mark panel particulars I.e. Board name, shipping section fornt side	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	w	--	--
	i) Mark destinaiton details as per BSPTCL Norms	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	w	--	--
	j) Enclose packing slip	Visual	100%	BSPTCL Specn/ Apprd Dwg.	As per MS Std / BSPTCL Specn.	QC RECORD	A	J	S	w	--	--

\*\* T- 100% WITNESSING  
U- 25% WITNESSING