



List of Standard Quality Assurance Plan for Electrical Equipment											
S. NO.	QAP No.	QAP Description	No. of Sheets								
1	E-01	415 V LT Switchgear Panels	4								
2	E-02	11 kV Ring Main Unit	3								
3	E-03	Distribution Transformers	4								
4	E-04	HT Cable XLPE (11 KV-E)	5								
5	E-05	LT XLPE/ PVC Insulated Cable Upto and Including 1100V	4								
6	E-06	DG Sets	2								

Pur Bruger

						STANDARD QUALITY ASSURAN	CE PLAN						
				Equipment: 415 V L	.T Switchgear Panels		Project :						
	RUIDP	Manufacurer :		DOC NO: Std.QAP/2	3-24/E-01		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
	STC		ā	REV NO : 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)						
				DATE :		***	Contractor:					- A	
			93 (Reaffrimed Year 2013) and latest amend	ments									
					Quantum/				Insp	ecting Agend	у	Remarks	
S. No.	Item/ Component & Operation	Characteristics	Class of Check	Type of Check	Frequency of check	Ref. Documents/ Standards	Acceptance Norms	Format of Record	Vendor/ Sub Vendor	Contractor	Client/TPIA		
1	Raw Material / Bought o	out items											
1.0	Panel Fabrication Sheet	Dimension	Minor	Measurement	Sample/Lot	IS 513 :2016 /IS1079:2017/ Project Specifications/Drawings		Supplier TC/Inspection Report	Р	R	R		
		Surface Finish	Minor	Visual	100%		IS 513 :2016 /IS1079:2017/	Supplier TC/Inspection Report	Р	R	R		
	TOWARD WAVE DEVANCED SURVEYORS	Chemical Properties	Major	Chemical	Sample/Lot		Project Specifications/Drawings	Supplier Report/Third party Lab report	Р	R	R		
		Mechanical Properties	Major	Measurement	Sample/Lot			Supplier Report/Third party Lab report	Р	R	R		
		Size & Cross Section	Minor	Measurement	1			4	Р	R	R		
2.0	Bus bar (Copper)	Conductivity(Electrcial Resistivity)	Major	Measurement	,	IS 613:2000 (Reaffrimed year 2016) /IS	IS 613:2000 (Reaffrimed year 2016) /IS	Supplier Report/Third party	Р	R	R	1	
2.0	4	Mechanical properties (Elongation,Tensile,Hardness,Bend Test)	Major	Measurement	Sample/Lot	5082:1998(Reaffrimed Year :2017)/Project Specifications	5082:1998(Reaffrimed Year :2017)/Project Specifications	Lab report	Р	R	R		
		Chemical Properties	Major	Measurement					R	R	R		
		Make,Rating & Type	Minor	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OFM TC/Inspection Report	р	R	R		

IS 2705:1992(Reaffrimed Year 2017)/IS

16227:2016/Project Specifications

100%

IS 2705:1992(Reaffrimed Year 2017)/IS

16227:2016/Project Specifications

OEM TC/Inspection Report

3.0 Current Transformers

Functional/Routine lests

Major

Measurement

Pld Shargen 12/5/2023

	STANDARD QUALITY ASSURANCE PLAN												
				Equipment: 415 V L	T Switchgear Panels		Project :						
	RUIDP	Manufacurer :		DOC NO: Std.QAP/23	24/E-01		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
	STC			REV NO : 00			Consultant: SHAH TECHNICAL CONSULTAN	IT (STC)		ě			
				DATE :		.=-	Contractor:						
				Specif	ications:Approved Drav	vings/Project Specifications/IS 8623:1993 (Reaf	frimed Year 2013) and latest amendments						
	Item/ Component &				Quantum/	****			lnsp	ecting Agenc	у	Remarks	
5. No.	Operation	Characteristics	Class of Check	Type of Check	Frequency of check	Ref. Documents/ Standards	Acceptance Norms	Format of Record	Vendor/ Sub Vendor	Contractor	Client/TPIA		
4.0	Control Transformers	Maxe, Rating & Type	Minor	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/inspection Report	Р	R	R	1	
4.0	Control mansionners	Functional/Routine Tests	Major	Measurement	100%	IS 11171:1985 (Reaffrimed Year 2016)/Project Specifications	IS 11171:1985 (Reaffrimed Year 2016)/Project Specifications	OEM TC/Inspection Report	Р	R	R		
5.0		Make/Rating/Type	Minor	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/Inspection Report	Р	R	R		
5.0	Meters	Functional/Routine Tests	Major	Measurement	100%	IS 1248:2003(Reaffrimed Year 2018)/Project specifications	IS 1248:2003(Reaffrimed Year 2018)/Project specifications	OEM TC/Inspection Report	р	R	R		
6.0	Relays	Make/Rating/Type	Minor	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/Inspection Report	Р	R	R		
		Functional/Routine Tests	Major	Measurement	100%	IEC 60255:2013/Project specifications	IEC 60255:2013/Project specifications	OEM TC/Inspection Report	Р	R	R	8	
7.0	ACB/MCCB	Make/Rating/Type	Minor	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/Inspection Report	P	R	R		
0.0000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Functional/Routine Tests	Major	Electrical	100%	IS60947:P-2:2016/Project Specification	IS60947:P-2:2016/Project Specification	OEM TC/Inspection Report	Р	· R	R		
1	Capacitors/Series	Make/Rating/Type	Miner	Visual	100%	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/Inspection Report	Р	R	R		
8.0	Reactors(Where Ever Applicable)	Functional/RouitneTests	Major	Electrical	100%	IS13585:2012(Realfrimed Year 2017) /IS13340:2012(Realfrimed Year 2017)/ IS 2026-6:2017/Project Specifications	IS13585:2012(Reaffrimed Year 2017) /IS13340:2012(Reaffrimed Year 2017)/ IS 2026-6:2017/Project Specifications	OEM TC/Inspection Report	р	R	R		
9.0	Control Cables	Make/Rating/Size/Type	Minor	Visual	Sample/Lot	As per Approved Drawings/BOM	As per Approved Drawings/BOM	OEM TC/Inspection Report	Р	R	R	8	
3.0	Control capies	Acceptance test/Routine Tests	Major	Electrical	IS 694:2010 (Reaffrimed Year 2020)	IS 694:2010 (Reaffrimed Year 2020)/Project Specifications	IS 694:2010 (Reaffrimed Year 2020)/Project Specifications	OEM TC/Inspection Report	Р	. R	R		
Vendor					Contractor				Clie	ent		-	
SIGNATURE: SIGNATURE:			SIGNATURE:					SIGNATURE:					
NAME: NAME:			NAME:					NAME:					

	STANDARD QUALITY ASSURANCE PLAN													
				Equipment: 415 V L	.T Switchgear Panels		Project :							
	RUIDP	Manufacurer :	a	DOC NO: Std.QAP/23	-24/E-01		Client: RAJASTHAN URBAN INFRASTRUCTU	RE DEVELOPMENT PROJECT	*					
	STC		и	REV NO : 00		1	Consultant: SHAH TECHNICAL CONSULTANT (STC)							
				DATE :			Contractor:							
				Specif	ications:Approved Dra	wings/Project Specifications/IS 8623:1993 (Reaf	eaffrimed Year 2013) and latest amendments							
	Item/ Component &				Quantum/				Insp	ecting Agend	у	Remarks		
S. No.	Operation	Characteristics	Class of Check	Type of Check	Frequency of check	Ref. Documents/ Standards	Acceptance Norms	Format of Record	Vendor/ Sub Vendor	Contractor	Client/TPIA			
11	In Process Inspection				,									
		1.Check for Panel Assembly							×	,				
1.0	Assembly For Panel	1.1.Alignment of panel	Major	Physical Verification	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	R	R			
	10000000000000000000000000000000000000	1.2.Cable Entry	Major	Physical Verification	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	R	R			
		1.3.Gasket Arrangement	Minor	Physical Verification	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	R	R			
		2.Check for Bus bar Mounting												
	Assembly For Bus Bar	2.1. Tightness of bus bar joints	Major	Physical Test by Torque Wrench	100%	Bus bar Should be Tighttened properly	Bus bar Should be Tighttened properly	Internal Inspection Record	Р	. R	R			
2.0		2.2.Busbar jointing arrangements & Overlapping	Major	Physical Verification	100%	Bus bar Jointing to Should be done properly	Bus bar Jointing to Should be done properly	Internal Inspection Record	Р	R	R	+		
		2.3.Busbar bending & Drilling	Major	Physical Verification	100%	Bednding and drilling to be done properly	Bednding and drilling to be done properly	Internal Inspection Record	Р	R	R			
		2.4.Phase Identification & Clearance	Critical	Physical Verification	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	R	R			
		2.5.Busbar Sleeving	Minor	Physical Verification	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	R	R			
		3.1.Proper wire Clamping	Major	Visual Check	100%	All the Cables/Wires to be proprely clamped	All the Cables/Wires to be proprely clamped	Internal Inspection Record	Р	R	R			
3.0		3.2.Continuity & Ferruling as per wiring drawing	Major	Visual Check / Test	100%	As Per App.Drg	As Per App.Drg	Internal Inspection Record	Р	. R	R			
		3.3.Proper crimping of lugs / Connections tightening at terminals	Major	Visual Check / Test	100%	Lugs were to be properly crimped	Lugs were to be properly crimped	Internal Inspection Record	Р	R	R			
		4.1 Raw material for Powder coating	Major	a) Storage b) Paint- UV resistant type	100%	As per IS 13871- 1993	a)As per IS 13871 1993 Clause 6.1.2 b) Powder Test certificates.	IR/ Log Book	Р	R	R			
4.0	Painting / Coating- In process and Testing Requirements	4.2 Surface preparation - Feeder Panel	Major	Seven Tank cleaning process	100%	As per Manufacturer standard procedure.	Without any Visual defects	IR/ Log Book	Р	ĸ	н	-		
		4.3 Paint Shade and Thickness	Major	Visual & Measurement	Random Check	As per Approved Drwaings/Project Specifications	As per Approved Drwaings/Project Specifications	Internal Inspection Record/ Log Book	Р	R	R			
	Vendor				Contráctor	H Control of the Cont			Clie	ent				
SIGNA	IGNATURE : SIG			×				SIGNATURE:						
NAME:			NAME:	-				NAME:						

	STANDARD QUALITY ASSURANCE PLAN												
				Equipment: 415 V	LT Switchgear Panel		Project :						
	RUIDP	Manulacurer :		DOC NO: Std.QAP/23	-24/E-01		Client: RAJASTHAN URBAN INFRASTRUCTU	RE DEVELOPMENT PROJECT					
	STC			REV NO : 00			Consultant: SHAH TECHNICAL CONSULTAN	T (STC)					1
				DATE :			Contractor:						\dashv
				ISpeci	fications:Approved Dra	wings/Project Specifications/IS 8623:1993 (Rea	frimed Year 2013) and latest amendments						
					Quantum/				ins	pecting Agend	:y	Remarks	+
S. No.	Item/ Component & Operation	Characteristics	Class of Check	Type of Check	Frequency of check	Ref. Documents/ Standards	Acceptance Norms	Format of Record	Vendor/ Sub Vendor	Contractor	Client/TPIA		
10	rinai inspection		T						1			ı	\dashv
		1.Physical check	Major	Physical	100%	Should be Free from Damages/Rust/scratches	Should be Free from Damages/Rust/scratches	Inspection report	P	w	w		
		2.Dimensional check of Enclosure, Bus bars & CRCA Sheet	Minor	Measurement	Random sample	As per Approved Drawing	As per Approved Drawing	Inspection report	P	w	w		
		3. Mounting Arrangements Of Name Plates & Identifications, Verification Of component, Rating, BOM Arrangement As- Per GA Drawing Make.	Minor	Physical Verification	100%	As per Approved Drawing /Approved BOM	As per Approved Drawing / Approved BOM	Inspection report	P	w	w	ā	
		4.Wiring Check, Size check	Minor	Physical	Random sample	As per project specifications/As per Approved Drawing	As per project specifications/As per Approved Drawing	Inspection report	P	w	w		
1.0	Final Inspection	5.Circuit Function/operational test of all the components/Inter logic check/APFC Relay Check	Major	Electrical	100%	As per project specifications/Approved Drawings	As per project specifications/Approved Drawings	Inspection report	P	w	w		
		6.Insulation resistnce Test (Before and after HV)	Critical	Electrical	100%	As per project specifications/IS 8623:1993(Realfrimed Year 2013)/IEC 61439:-1:2011 As per project specifications/IS	As per project specifications/IS 8623:1993(Reaffrimed Year 2013)/IEC 61439:-1:2011 As per project specifications/IS	Inspection report	Р	w	w		1
		7.HV Test (2.5kv For GOSec)	Critical	Electrical	100%	As per project specifications/is 8623:1993(Realfrinied Year 2013)/IEC 61439:-1:2011	As per project specifications/i5 8623:1993(Realfrimed Year 2013)/IEC 61439:-1:2011	Inspection report	Р	w	w		٦
		8.Phase identification	Major	Physical Verification	100%	As per Approved Drawing	As per Approved Drawing	Inspection report	Р	w	w		٦
		9.Check For Bus Bar Clearance	Major	Physical Verification	100%	As per Approved Drawing	As per Approved Drawing	Inspection report	P	w	w		7
		10.Final Painting											7
		10.1.Shade	Major	Visual	Random sample	iS 13871:1993/As per project specifications	IS 13871:1993/As per project specifications	Inspection report	р	w	w		٦
		10.2.Thickness	Major	Measurement	Random sample	IS 13871:1993/As per project specifications	IS 13871:1993/As per project specifications	Inspection report	Р	w	w		
		11.Function check of Thermostat and Space heater	Minor	Electrical	Random sample	As per project specifications	As per project specifications	Inspection report	Р	w	.w		
		1.1emperature rise	Major	Electrical	Sample/Design	As per project specifications/IEC 61439:- 1:2011	As per project specifications/IEC 61439:- 1:2011	Type Test Report	P	R	R		
2.0	Type Test	2.Short Circuit withstand test	Major	Electrical	Sample/Design	As per project specifications/IEC 61439:- 1:2011	As per project specifications/IEC 61439:- 1:2011	Type Test Report	Р	R	R		
	200	3.Impulse withstandTest	Major	Electrical	Sample/Design	As per project specifications/IEC 61439:- 1:2011	As per project specifications/IEC 61439:- 1:2011	Type Test Report	P	R	R		
		4 IP Certificate Verification	Major	Physical	Sample/Design	As per project specifications/IEC 61439:- 1:2011	As per project specifications/IEC 61439;- 1:2011	Type Test Report	Р	R	R		
IV	Final Documentation	1.As Built Drawing	2.Test Certificates	3.Packing List		8						2	
	P-Perform			Review		W-Wittness	OEM-Origional Equipment Manufacturer						7
	Vendor				Contractor			Client					
SIGNA	SIGNATURE				¥			SIGNATURE:					
												_	

of Reminder

4 of 4

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S	TC	

STANDARD QUALITY ASSURANCE PLAN	
EQUIPMENT: 11 kV Ring Main Unit	Project:
QAP NO: Std QAP/ 23-24/ E-02	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
DATE:	Contractor:

	Drawings/					

								li	rspecting Agend	су	
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks
1	ng Raw Materials	3	4	5	6	7			9		10
		Finish & Dimension Check	Visual & Physical	T .		, , , , , , , , , , , , , , , , , , , ,			1		10
1	CRCA Sheet / Stainless/Galvatite Steel	Chemical Composition	Chemical Test	Sample/ Lot	IS 513 Part-1:2016 / EN 1088-2	IS 513 Part-1:2016 / EN 1088-2 /ASME SA-	Vendor Test Certficates/Incoming Inspection	Р	R	R	
	Stainless/Galvaute Steel	Mechanical Properties	Mechanical Test		/ASME SA-240	240	Records				
		Finish & Dimension Check	Visual & Physical						- 1		
2	Aluminum / Copper Bus Bars	Chemical Composition	Chemical Test	Sample/ Lot	IS 613:2000 (Reaffrimed year 2016) /IS 5082:1998(Reaffrimed	IS 613:2000 (Realfrlined year 2016) /IS 5082:1998(Realfrlined Year :2017)/Project	Vendor Test Certficates /	Р	R	R	
		Mechanical & Electrical Properties	Mechanical & Electrical Test	- Sumpler Edi	Year :2017)/Project Specifications	Specifications	Incoming Inspection Records	,	, n		
3	Current Transformer	Make, Type , Class, CTR & Burden	Visual & Physical	100%	IEC 61869 - 1 &2 :2012/ IS 2705:1992(Reaffrimed Year	IEC 61869 - 1 &2 :2012/ IS 2705:1992(Reaffrimed Year 2017)/IS	Vendor Test Certficates	Р	R	R	
		Routine Test	Electrical Tests	100%	2017)/IS 16227:2016/Project Specifications	16227:2016/Project Specifications	vendor rest certificates	,	`		
4	Vacuum Circuit Breaker	Routine Test	Mechanical & Electrical Tests	100%	IEC 62271-100 :2020/Project Specifications	IEC 62271-100 :2020/Project Specifications	Vendor Test Certficates / Incoming Inspection Records	Р	R	R	
		Make, Type , Class, PTR & Burden	Visual & Physical	1	IEC 61869 - 1 & 3:2020 / IS						9
5	Potential / Voltage Transformer & Auxiliary Transformer	Dimesions	Measurement	100%	16227:2016/Project SpecificationsIS 11171:1985	IEC 61869 - 1 & 3:2020 / IS 16227:2016/Project SpecificationsIS	Vendor Test Certficates	Р	R	R	
	& Auxiliary Transformer	Partial Discharge Test	Electrical Tests		(Reaffrimed Year 2016)/	11171:1985 (Reaffrimed Year 2016)/	1 - 1 - 2 - 1 - 2 - 1 - 1 - 2 - 1 - 1 -				
	-	Routine Test	Electrical Tests					L. C.			
		Make & Type	Visual & Physical	1							
ii-		Calibration Test	Electrical Tests		IEC 60255:2013/Project						
6	Relays	HV Test	Electrical Tests	100%	specifications	IEC 60255:2013/Project specifications	Vendor Test Certficates	Р	R	R	
		Performance Test	Electrical Tests								
		Routine Test	Electrical Tests								
7	Indicating Meters - Voltmeter & Ammeter, Energy Meter	Routine, Calibration & Performance Test,Make,Type,Model	Electrical Tests	100%	IS 1248:2003(Reaffrimed Year 2018)/13010:2002(Reaffrimed Year 2012)/Project Specifications	IS 1248:2003(Realfrimed Year 2018)/13010:2002(Reaffrimed Year 2012)/Project Specifications	Vendor Test Certficates / Incoming Inspection Records	Р	R	R	i.
8	Voltage Presence Indicator & Fault Passage Indicator	Functional Test	Electrical Tests	100%	IEC 62271-206, IEC 61958 & IEC 6100	IEC 62271-206, IEC 61958 & IEC 6100	Vendor Test Certficates / Incoming Inspection Records	Р	R	R	
В	Multi Function Meter & Manometer	Calibration & Performance Test,Make,Type,Model	Electrical Tests	100%	IEC 62052-11 & IEC 62053-2 / IEC 61000	IEC 62052-11 & IEC 62053-2 / IEC 61000	Vendor Test Certficates / Incoming Inspection Records	Р	R	R	
9	Load Break Switch/ Disconnector	Visual & Dimension Check	Visual & Physical	100%	IS/IEC 62271:103:2011	IS/IEC 62271:103:2011	Vendor Test Certficates	Р	R	R	
1	Disconnector	Routine Test	Electrical Tests		(Reaffrimed Year 2015)	(Reaffrimed Year 2015)					
		Creepage & Dimension Check	Visual & Mechanical Test								
10	Support Insulators	Mechanical Properties	Mechanical Tests	100%	IS 9431:1979	IS 9431:1979	Vendor Test Certficates	Р	R	R	-
		Dry Power Frequncy Voltage Withstand Test	Electrical Tests		(Reaffrimed Year 2014)	(Reaffrimed Year 2014)					ž.
		PD Test	Electrical Tests								
		Dimension Check	Visual & Mechanical Test								
10	Gas to Air Bushing	Mechanical Properties	Mechanical Tests	100%	IEC 60137:2017	IEC 60137:2017	Vendor Test Certficates	P	R	R	
	1000-0000000-0000-	Partial Discharge Test	Electrical Tests		300000000000000000000000000000000000000						
		Dry Power Frequncy Voltage Withstand Test	Electrical Tests			440					
ores.		Dimesions	Measurement		IS 1367 P-1:2014(Reaffrimed						
11	High Tensile Bolt Fastners	Threading	Gaugeing	On random basis	Year:2019)	IS 1367 P-1:2014(Reaffrimed Year:2019)	Vendor Test Certficates	Р	R	R	
		Hardness	Mechanical								
12	Wires/Cable	Visual & Finish	Visual & Finish	100%	IS 694:2010 (Reaffrimed Year 2020)/IS 7098 P-	IS 694:2010 (Reaffrimed Year 2020)/IS 7098 P-1:1988(Reafffirmed	Vendor Test Certificates	Р	R	R	
		Routine Test	Electrical Tests	1000000	1:1988/Reaffirmed	7098 P-1:1988(Reafffirmed			***		
	A.Vaccum Bottle B. Tripping Coil	Visual & Finish	Visual & Finish	100%	As per approved Drawing	As per approved Drawing	Vendor Test Certificates	Р	R	R	
	C. Closing Coil	Routine Test	Electrical Tests		- For opposite Stating	po. spp.oros s.ag					

				STAI	NDARD QUALITY ASSURANCE	PLAN						
			EQUIPMENT: 11 kV Ring M	ain Unit			Project :		6			
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E	-02	C. R. State of the Control of the Co		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
	CALLEST SELECTION FROM THE CONTROL OF A SPECIFICATION OF A LEGISLATION OF		REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)					
	STO		DATE:				Contractor:					
			DATE.				Contractor:					
	·		Speci	lications: Approved Dra	awings/ Project Specifications/ IEC 62	2271 and Latest amendments						
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks	
	ing Raw Materials							Vendor				
1_	2	3	4	5	6	7	8		9		10	
1-proc	:055		,									
		Dimesions	Measurement									
13	Panel Fabrication	Cable Entry	Visual & Physical	100%	Approved Drawing	Approved Drawing	Internal Inspection Record	Р	R	R	i	
		Alignment of Panel	Visual & Physical									
13	Tank Fabrication	Dimesions	Measurement	100%	Approved Drawing	Approved Drawing	Internal Inspection Record	P	R	R		
	220007/2011 V-10002000/P05P430	Machining & Fabrication	Visual & Physical				mitorial inspection record					
14		Alignment of panel & Bus bar	Visual & Physical								1	
		Check for Bus bar Mounting	Visual & Physical							()	ı	
		Tightness of bus bar joints % Bushings	Visual & Physical			,				()	i	
	1	Busbar jointing arrangements & Overlapping	Visual & Physical	On random basis	Approved Drawing	Approved Drawing	Internal Inspection Record	P	R ·	R	1	
		Busbar bending & Dritting	Visual & Physical	ě						()	i	
		Phase Identification & Clearance	Physical & Measurement								i	
		Busbar Steeving - Joints, Tap points, Droppers etc	Visual & Physical									
15	Breaker, LBS/Disconnector &	Visual & Dimension Check	Visual & Finish	100%	Approved Drawing	Approved Drawing	Internal Inspection Record	P	R	R	ľ	
	Earth Switch Assembly	Alignment of Components & Mechanical (Manual/Electrical)Operation	Physical & Mechanical/Electrical	100%	Approved Drawing	Approved Drawing	internal inspection Record			, °		
		Visual, Finish, Make & Size	Visual									
16	Wiring	Continuity & Ferruling as per wiring drawing	Visual & Physical	On random basis	Approved Drawing	Approved Drawing	Internal Inspection Record	P	R	R	i .	
		Proper crimping of lugs / Connections tightening at terminals	Visual & Physical		, application in the second	, pp. 0100 blanning	mana mapadidi ricada					
aintin	ng / Coating- In process and Test	ing Requirements			e e			•				
1	Surface preparation - Blast cleaning for Panel Stands(Which are spray painted)	Sa 2.5 Very thorough blast cleaning	Measurement & Visual	100%	NACE SSPC VIS 1 / Sa 2.5	Mill scale, rust and foreign matter shall be removed to the extent that the only traces remaining are slight stains in the forms of spots or stripes. Finally, the surface is cleaned with a vacuum cleaner, clean dry compressed air or a clean to that the clean to the clean	IR	Р	R	R	,	
2	Raw material for Powder coating	a) Storage b) Paint- UV resistant type	Visual	100%	As per IS 13871- 1993	a)As per IS 13871 1993 Clause 6.1.2 b) Powder Test certificates.	IR/ Log Book	Р	R	R		
3	Surface preparation - Feeder Panel	Seven Tank/ Eleven tank cleaning process	Visual	100%	As per Manufacturer standard procedure.	Without any Visual defects	IR/ Log Book	Р	R	R		
4	Temperature control to be monitored for Panel Stands (Which are spray painted)	Relative Humidity, Dew Point temperature, Air temperature, Delta Value, Steel temperature	Measurement	100%	RH - Not greater than 80%. Steel tempr shall be 3" Deg C higher than dew point temperature.	RH - Not greater than 80% Steel tempr shall be 3° Deg C higher than dew point temperature.	IR/ Log Book	Р	R	R		

As per IS 13871-1993- Table 1

Random sample (10% of every lot)

a) Paint Shade b) DFT Thickness c) Cross Cut Adhesion Test. d) Scratch hardness test

Final Inspection

a) Paint shade- As per approved drawing b) DFT thickness in the range 80-100

b) Dr I trickness in the range au-100 microns.
c) No visible damage or detachment of film.
d) No such scracthos as to show bare metal.

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				STAN	NDARD QUALITY ASSURANCE P	LAN					
			EQUIPMENT: 11 kV Ring M	ain Unit			Project :	8			
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E	-02			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
	An and the last control of the last of the last of the section of the last of	,	REV.NO: 00		à-		Consultant: SHAH TECHNICAL CONSULTANT (STC)				
	STC	£	DATE:				Contractor:				
			Speci	fications: Approved Dra	wings/ Project Specifications/ IEC 62						
	Inc. Section Co.							In	specting Agenc	у	
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub	Contractor	Client / TPI	Remarks
	ng Raw Materials							Vendor			
1 nat T	esting 2	33	4	5	6	7	8		9		10
nai i	esting			,			,				
	,	Gerneral Arrangment & Workmanship, Measurement of Dimensions of Verticles, Power/Control/Earthing Busbars, Thickness of sheets Doors/ Load bearing/ Non Load Bearing Members/Gland Plate	Visual/Measurement	100%	Approved Drawings	Approved Drawings					
		Verification of Components - Make, Rating/Type/Model , Tightness of Control Wiring/Busbar (Torque Marking)	Visual/Measurement	100%	Approved Drawings	Approved Drawings				-	
		Bus bar clearnces/ Barriers -Acrylic/Polycarbonates/FRP sheet arrangement, Earthing Wires & Danger /Caution Sticker Visibility	Visual / Physical / Measurement	100%	Approved Drawings	Approved Drawings					
		Mimic, Nameplates of Panel, Rating plates with System Voltage grade, Current Rating, Falult Levels etc.	Visual	100%	Approved Drawings	Approved Drawings					
		Power-frequency voltage withstand test & & Functional Test of VPI	Electrical Tests	100%	IEC 62271:200 & IEC 61958	IEC 62271:200 & IEC 61958	Test Report	Р	w	w	2 2
		Dielectric tests on auxiliary and control circuits	Electrical Tests	100%	IEC 62271:200	IEC 62271:200					
18	RMU	Control & Power Cicuit Circuit/Functional/Scheme Check/ Interlocking Check/ DI & DO of FRTU	Electrical Tests	100%	Approved Drawings	Approved Drawings					-
		Gas Filling Pressure & Leakage Test	Visual & Physical	100%	Custom Method by handheld Sniffing and leak detection Equipment	No leakage & pressure drop	,				
		Measurement of resistance of main circuit/Contact Resistance Measurement / mV Drop Test	Electrical Tests	100%	IEC 62271:200	IEC 62271:200				2	,
		Primary Current Injection for Relays, FPI & Meters	Electrical Tests	100%	IEC 62271:200	IEC 62271:200					
		Lighting Impulse Voltage Withstand Test									
		Temperature Rise Test on main circuit and on auxiliary and control equipment									
		Internal Arc Withstand Test	Type Tests	One Sample of similar design	IEC 62271 & IEC 60529	IEC 62271 & IEC 60529	Type Tests Report	P	R	R	
		Partial Discharge Test	1	similar design	AND COMMENT OF STREET SECTION OF STREET						
		Short-time and pick withstand current test	1								
Ingress Protection - RMU & SF6 Filled Tank											
P- Perform			R-Review of Documents TPIA-Third Party Inspection Agency				W- Witness		OEM- Original	Equipment Manuf	acturer
Manufacturer / Vendor			Contractor				Client/ TPIA				
lgnatu	ure:	Signature:				Signature:					

MANUFACTURER/ VENDOR:

STANDARD QUALITY ASSURANCE PLAN EQUIPMENT: Distribution Transformers Project: OAP NO: Std QAP/ 23-24/ E-03 Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT REV.NO: 00 Consultant: SHAH TECHNICAL CONSULTANT (STC) DATE: Contractor:

Specifications: Approved Drawings/ Project Specifications/ IS 1180 & 2026 and Latest amendments

					Reference Document/	nent/ Acceptance Norms Format of Reco		Insp	ecting Agency	à	
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks
A)	Raw Materials	小平的地域上的形式的特别是10%。15年间结合现在多级特别		HIS DAY STAN				B-10-36	241824		the State of the Asia Confidence of the
		a)Width & thickness of bare conductor (Bared and Covered conductor)	Measurement					Р	R	R	
		b) Suface finish	Visual		Mfr. Plant standard /	Mfr. Plant standard /	QC Record /	Р	R	R	
1	Copper conductor	c)Corner Radius	Visual	One Sample/ Lot	IS 13730 / IS 12444 /	IS 13730 / IS 12444 /	Supplier's TC/ Mill	Р	R	R	
		d) Mechanical properties: Tensile strength, Elongation and Hardness	Mechanical	One Sample, Est	IS 7404	IS 7404	test reports	Р	R	R	
		e)Electrical Properties: Resistivity, Conductivity and Purity	Electrical					Р	R	R	
		a) Dimensions	Measurement					P	R	R	
		b)Lamination thickness	Measurement	1			1	Р	R	R	
		c) Flatness (Wave factor)	Measurement	1	25			Р	R	R	
2	CRGO Core Lamination	d) Density	Electrical	One Sample/ Lot	Mfr. Plant standard / IS: 3024- 2015	Mfr. Plant standard / IS: 3024-2015	QC Record / Supplier's TC	Р	R	R	
		e)Specific core loss/ Watt loss measurement	Electrical		2010	3024-2013	Suppliers 10	Р	R	R	
		f)Stacking factor	Electrical					Р	R	R	
	=	g)Cutting end edge burrs	Visual					Р	R	R	
3	Insulationg oil	a) Appearance b)Density c)Viscosity c)Viscosity d)Interfacial tension e)Flash point f)Pour point g)Total Acidity h)Corrosive sulphur l)Break down voltage j)Tan delta at 90 deg C k)Oxidation Stability l)Pressure of oxidation inhibitor m) Water Content	Lab test	Oil Sample/ Lot	Mfr. Plant standard / IS 335- 2018 / IS 1866-2017	Mfr. Plant standard / IS 335 2018 / IS 1866-2017	OC Record/ Supplier TC	P	R	R	
4	Gaskei	a)Dimension b)Hardness c)Tensile strength d)Compressibility e;Recovery f)Compression set at 110 deg for 24 Hrs % Max g)Flexibility h)Ageing in Air & Oil i)ph Value of Water content j)Density	Mechanical •	One Sample/ Lot	Mir. Plant standard / IS 4253	Mfr. Plant standard / IS 4253	QC Record/ Supplier TC	P	R	R	
5	Press boards	a)Thickness b)Apparent Density c)Tensile strength d)Compresssibility e)Shrinkage f)PH & conductivity of Aquous extract h)Ash content i) Electric Stength in Air	Lab test ,	One Sample/ Lot	Mfr. Plant standard/ IEC60641-2-2004	Mfr. Plant standard/ IEC60641-2-2004	QC Record/ Supplier TC	P	R	R	

					Reference Document/			Insp	Inspecting Agency		
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks
6	Insulating Kraft paper	a)Thickness b)Density c)Tensite strength & Elongation d) Tear Index e)Moisture content f)Electric strength g)Ash content h)PH & conductivity of Aquous extract	Lab test	One Sample/ Lot	Mfr. Plant standard / IS 9335 / 1060/IEC60554-2/ IEC 60554-3/5	Mfr. Plant standard / IS 9335 / 1050/IEC60554- 2/ IEC 60554-3/5	QC Record/ Supplier TC	Р	R	R	
7	Off circuit tap Changer (OCTC) (Type test)	a) Make, rating and Dimensional check, b) Sequence test c) Mechanical test of tap selector with motor drive, d) Operation test of OLTC e) HV tes ton Aux Circuit. f) Pressure test	Electrical	100%	Approved drawing / Customer spec IEC 60214-1:2014/ IS 8468-1: 2018	Approved drawing / Customer spec IEC 60214-1:2014/ IS 8468- 1: 2018	QC Record/ Supplier TC	Р	R	R	Note: OLTC Routine/ Type test reports from supplier shall be provided to inspector during the Third Party Inspection.
8	Bushings	a)Dimension b)Visual inspection (Make & Rating) c) Power frequency withstand test d) porosity test (for porcelain) e) Temp. cycle test	Mechanical/ Electrical .	On Samples/ Lot	As per Approved drg/ IS 3347/IEC60137/IS:8603	As per Approved drg/ IS 3347/IEC60137/IS:8603	QC Record/ Supplier TC	Р	R	R	
9	OTI & WTI	a)Functional test / Calibration b) Accuracy of temperature c) switch operation d) HV test on terminals	Test / Measurement	100%	Approved drawing / Customer spec	Approved drawing / Customer spec	QC Record/ Supplier TC	Р	R	R	
10	Radiators	a)Pressure test for leakage b)Size and no. of cooling section c)Painting d) Dimensions	Test Measurement Visual	100%	Approved drawing / Customer spec	Approved drawing / Customer spec	QC Record/ Supplier TC	Р	R	R	
11	Bucholz relay	a)Functional test / Calibration b)Oil leakage test c) Gas volume lest d) Continuty test for alarm & trip e) HV Test on terminals, IR tset	Functional	100%	Approved drawings/ IS 3637: 1966	Approved drawings/ IS 3637: 1966	Supplier TC	Р	R	R	
12	Core Clamp	a) Clamp thickness b) Length and Width c; Fixing Holes d) Quality of weld	, Mechanical	Samples/ Lot	Mfr. Plant standard / IS: 2062 / IS: 1239	Mfr. Plant standard / IS: 2062 / IS: 1239	QC Record/ Supplier TC	Р	R	R	
13	Fastners	a)Size & Thread dimensions b) Mechanical tests	Mechanical	Samples/ Lot as per relevant IS	Mfr. Plant standard/ IS: 1363- 2018 (Part-II & III)	Mfr. Plant standard/ IS: 1363-2018 (Part-II & III)	QC Record/ Supplier TC	Р	R	R	
14	Oil Level Indicator(MOG)	a) Make & model b) Check for level indication c)Switch contact operation d)leak lest e) HV test on terminals	Functional	100%	Approved drawing / Customer spec	Approved drawing / Customer spec	Supplier TC	Р	R	R	,
15	Current Transformer	a) Make & reading b) Accuracy test c)Polarity test d) HV test on terminats	Functional	100%	Mfr.Plant std/IS 16227-1 &2/ 2016	Mfr.Plant std/IS 16227-1 &2/ 2016	QC Record/ Supplier TC	Р	R	R	
16	Pressure Relief Valve	a) Make & reading b) Operational Pressure c)Switch contact test d) HV test on terminals	, Functional	100%	Approved drawing / Customer spec	Approved drawing / Customer spec	Supplier TC	Р	R	R	If applicable
17	Gun Metal/Butterfly valves	a)Make & Model b)Dimensions c)Leakage Test(Hydraulic test for body and seat)	Test	Samples/ Lot	Approved drawing / Customer spec	Approved drawing / Customer spec	QC Record/ Supplier TC	Р	R	R	
18	Marshalling Box	a) Completness of wiring & fitting accessories b) Functional check c) HV test d) Paint shade & thickness e) BOM Verification f) IP Verification	Functional	100%	Approved drawing / Customer spec	Approved drawing / Customer spec	QC Record/ Supplier TC	Р	R	R	
В	In Process Plan/ Stage Inspect		Character and Charles	SAPES EXPLORED AND	HSS SECTION CONTRACTOR		edition and an air		Mark Salate		CHANGE TO REPORT OF CANADAS
1		a) Dimension verification b) Chemical composition c) Mechanical properties	Measurement Chemical	Samples/ Lot	Mfr. Plant standard / IS: 2062: 2011	Mir. Plant standard / IS: 2062; 2011	QC Record/	P R	R	R	Test certificates to be reviewed.
		d) Surface defects	Mechanical		4 2011	2002; 2011	Supplier TC	R	R	R	
	J	u) Surface defects	Visual	L	L			Р	R	R	

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					Reference Document/				ecting Agency		
.No Ite	em/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks
.1		Pressure Test	Mechanical	100%	IS 1180: 2014 with latest amendments.	IS 1180: 2014 with latest amendments.	Test Certificate	Р	R	R	Tank Pressure test shall be carri out on all transformer tanks at Manufacturing Unit,
1.2		Pressure Test (Type Test) Vaccum Test(Type Test) DP TEST on Weld Joints & Load bearing Joints (Random locations)	Mechanical	100%	IS 1180: 2014 with latest amendments,	IS 1180: 2014 with latest amendments.	Stage Inspection report	Р	w	w	Pressure & vaccum test shall be carried out as per IS 1180: 2014
Tra	ansformer Tank	a) Surface preparation b) Paint Shade	Physical	100%	As per Plant Standard/ Customer Specifications/ Approved vendor painting	As per Plant Standard/ Customer Specifications/ Approved vendor painting	Test certificate	P	w	w	a) External and Internal Surfaces tank should be covered with paint. B) Internal surface of tank shall painted with white Hot Oil, Fresistance, non-corossive varnish paint or epoxy to achieve DFT>microns.
e e		C) Paint Thickness	Visual Measurement		procedure	procedure					C) External surfaces of paint shall covered with Primer contemporaries and covered undercoat a Polyurethane/ Synthetic enamel fir coat to achive DFT > 130 microns.
		a)Dimensional Check	Measurement					Р	w	w	
		b)Limb & stack thickness	Measurement		Į.			Р	w	W	
2	Core Building	c)Core Diameter	Measurement '	100%	Approved data sheets/ Plant standard design	Approved data sheets/ Plant standard design	Stage Inspection report	Р	w	w	
		d)Window height	Measurement		Standard design	Flant standard design	report	Р	w	w	197
		e)Leg center	Visual					P	w	w	
		a)Dimensional check	Measurement		Approved data sheets/ Plant	Approved data sheets/	Chara tananatian	P	w	w	
.1	Test on core	b)Pre-Core loss measuremnt	Test	100%	standard design	Plant standard design	Stage Inspection report	P	w	w	
		a)Conductor size	Measurement			100 of ADDITIONAL STREET	W. 1.	P	w	w	
		b)ID, OD & Axial length	Measurement					P	w	w	, =
100		c)Radial depth of winding	Measurement		Approved data sheets/ Plant	Approved data sheets/	Stage Inspection	Р	W	W	1
3	Winding	d)No.of Turns e)Transposition & cross overs	Measurement	100%	standard design	Plant standard design	report	Р	W	W	
		f)Insulation arrangement and alignment	Visual Visual					P	W	W	
		g)Continuity Test	Visual					P	w	w	
		a)Cleanliness of core	Visual					P	w	w	
		b)Alignment Insulations b/w Core and Coil	Visual					Р	w	W	
		c)Cleaning of core before core coil assembly d)Arrangement of Top & Bottom Insulation	Visual Visual			1		P	W	W	(e)
		e)Tightness	Visual		Approved data sheets/ Plant	Approved data sheets/	Stage Inspection	P	w	w	
1	Core coil Assembly	f) Dielectric Insualtion Test of core.(2KV for 1 min)	Test	100%	standard design	Plant standard design	report	P	w	W	
		g)Earthing of core	Visual					Р	w	W	
		h) Ratio test on all taps i)Vector group & Polarity	Test					Р	W	W	
		j) Magnetic Balance test	Test Test		*			P	w	w	
				4000	100 00				VV	VV	
6	Connection & tap switch assembly	Lead disposition Brazing of lead joints Brazing of lead terminals Insulation over joints	Visual -do- -do- -do-	100% -do- -do- -do-	MfrDrg/Plant std -do- -do- -do-	MfrDrg./Plant std -do- -do- -do-	QC Record -do- -do- -do-	Р	w	w	
7	Ovening & tanking	a)Cleaning of tank b)Dyrigi c)Check lightness of clamped blocks and measurement of winding heights d)Electrical Clearances	Visual Visual Visual Visual Electrical	100 % 100 % 100 % 100 % 100 %	MfrDrg/Plant std -do- -do- -do- -do-	MirDrg./Plant std -do- -do- -do- -do-	QC Record -do- -do- -do- -do-	P	w	w	
		e)IR Values f)Oil Filling & Air release.	Visual .	100 %	-do-	-do-	-do-		,		
C) Fir	nal Inspection	NE 2 是 1 5 1 2 4 2 4 2 1 1 1 2 2 1 2 1 2 1 2 1 2 1	March A. C. Constraint			WE WORKED WARE	19 24 20 2	S VOIMEN	COLUMN TO	Service of the servic	
		a) Visual Examination	Visual	100%				Р	W	W	
		b) Dimensional checks & BOM check, Rating and valve plate, Terminals Marking	Measurement & Physical	One Job/ Rating	1			Р	w	w	
		c)Measurement of Winding resistance at all taps	Electrical	100%]	-		P	W	W	, .
		d)Measurement of voltage Ratio at all taps	Electrical	100%	4			Р	W	W	
. 1		e)Polarity & vector group test	Electrical	100%]	1	1	P	W	W	J

			T	D-1			Ins	ecting Agency	,	
.No Item/ Component & Op	peration Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client /	Remarks
	f)Magnetic Balance Test	Electrical	100%				Р	w	w	
	g)Measurement of Insulation resistance of winding, PI Value	Electrical	100%				Р	w	W	1 1
	h) Separate Source Power Frequency/Voltage Withstand test	Electrical	100%				Р	W	w	1
	i)Induced OverVoltage Withstand test	Electrical	100%				P	w	w	1
	j)Measurement of No-load losses & magnetising Current at Rated, 90 % and 110% of rated voltages	Electrical	100%				Р	w	w	
20	k)Measurement of impedance voltage/ short circuit impedance at principal tap and load loss measurement at principal tap. (50% and 100% Load) Load loss measurement at two extreme taps.	Electrical	100%				P	w	w	rs =
1.1 Routine / Acceptance	Spil current measurement in neutral. (limit <3%) Totals.	Electrical	100%	IS 1180-2014/ IS 2026 CBIP	IS 1180-2014/ IS 2026		Р	w	w	
.1 Routine / Acceptance	75% & 100% load	Electrical	Random samples	Manual-317	CBIP Manual-317	Witness test report	Р	w	w	
	n) Oil Leakage Test: -without Radiators fixing (Duration 8 Hours), -with radiator fixing on one transformer (Duration 8 Hours),	, Mechanical	100%				Р	w	w	7.
	Marshalling Box Operational & Functional Test: (Bucholz relay, OTI, WTI, MOG, PRV Check)	Electrical	100%				Р	w	w	1
	p) Oil BDV Test	Electrical	Random samples				Р	w	w	1
	q) Paint Shade & DFT thickness, Adhesion test	Electrical	Random location on transformer				Р	w	w	
	q)WTI CT Ratio, Neutral CT ratio check during full load test,	Electrical	100%				Р	w	w	
	r) Tests on OCTC operational tests	Electrical	100%				Р	w	w	1
4:	s) Pressure relief device operation check.	Physical	100%				Р	w	w]
	 Measurement of Magnetization current at Low Voltage/ Measurement and recording of currents with application of 400volts 3ph, ac supply on HV side and LV side shorted. (At all the taps) 	Electrical	100%				P	w	w	
	 u) Measurement of Efficiency and Regulation at Quarter, Half, 3/4th and Rated load- Calculations to be submitted. 	Electrical	100%				Р	w	w	
	v) Pressure Test	Physical '	100%				P	W	W	
	a) Temperature rise test	Electrical	Similar rating of	IS 1180: 2014	IS 1180: 2014	Type test report	Р	R	R	
	b) Lighning Impulse (Full wave and Chopped wave)	Electrical	Transformer	IS 1180: 2014	IS 1180: 2014	Type test report	Р	R	R	Note: Manufacturer should have t
	c) Short Circuit Dynamic Withstand Test	Electrical		IS 1180: 2014	IS 1180: 2014	Type test report	Р	R	R	test (Govt. Lab/ NABL accreditat withing 2 years from the date
2 Type Tests/ Special	The second of th	Physical	100%	IS 1180: 2014	IS 1180: 2014	Type test report	Р	R	R	Inspection for same/ higher rating
	e) Marshalling Box IP 55 Certificate	Test	Identical design	As per IEC 60529	As per IEC 60529	Type test report	Р :	R	R	reports to be submitted to Inspect during the Inspection.
	Measurement of acoustic noise level	Measurement	One sample/ Lot	IS 1180/ 2026/ CBIP	IS 1180/ 2026/ CBIP	Witness test report	Р	R	R	during the inspection.
	b) Measurement of Zero sequence impedence	Electrical	One sample/ Lot	IS 1180/ 2026/ CBIP	IS 1180/ 2026/ CBIP	THE SOUTH PORT	Р	R	R	
	a) Final Paint Touch up	Physical	100%	Mfr Standard	Mír Standard	QC Record	P	•	-	
3 Pre- Despatch	b) Packing Main unit and loose item	Physical	100%	Mfr std / Packing List / Chalan	Mfr std / Packing List / Chalan	QC Record	Р	-		
5 Tre- Despatch	c) Project Name Marking	Physical	100%	Mfr std / Packing List	As per Contract Specifications/ IS	QC Record	Р	-	-	4.4
	d) Accessories as per client requirements	Physical ,	100%	Mfr std / Packing List	2026/ CBIP Manual- 317	QC Record	Р	-		
le: 2. All the Distribution Tra 3. Type test reports has	datory on transformers and BIS license copy to be submitted during insper ansformers shall be manufactures as per IS 1180-2014 considering the L is to be submitted of Similar Rating Transformers considering the BEE Sta a	atest Amendments, r Labeling-I or higher/ with s	ame design specifications a	as per the offered Jobs. 4 during order finalization.						
	P- Perform	R-Review of	f Documents	TPIA-Third Party In	spection Agency	W- Witness		OEM- Orig	ginal Equipr	nent Manufacturer
	Manufacturer / Vendor		Co	ontractor				Client	TPIA	
nature:		Signature:				Signature:				

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Signature: Signature: Signature: Signature:

Name:

Name:

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THE CHICAGO			****
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STAN LANGAR	#FASTRIFTATRE	(ANELOPS/ADI)	PAGLI
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			STAGE SACRA

MANUFACTURER/ VENDOR:

STANDARD QUALITY ASSURANCE PLAN EQUIPMENT: HT Cable (11 KV-E) QAP NO: Std QAP/ 23-24/ E-04 REV.NO: 00 Consultant: SHAH TECHNICAL CONSULTANT (STC) DATE: Contractor:

Specifications: Approved Drawings/ Project Specifications/ IS 7098 Part-2:2011 (Reaffrimed Year :2021) / Latest amendments

S.No	Ham! Campanant & Campana				Reference Document/				Ins	Inspecting Agency		
	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks	
1 ncom	ing Raw Materials	3	4	5	6	7	8		9		10	
	J	Surface Finish & Diameter	Visual & Measurement									
		Tensile strength (Only for Aluminium)	Mechanical		IS 4026:2007 (Reaffrimed Year:2017), IS 5484:1997	IS 4026:2007 (Reaffrimed Year:2017), IS 5484:1997	Manday Tool					
		Elongation at Break (Only for Copper)	Mechanical		(Reaffrimed Year :2017), IS	(Reaffrimed Year :2017), IS	Vendor Test Certficates /					
1	Aluminium / Copper Wire Rod	Conductivity/ Resistivity	Electrical Tests	1 Coil per Material Lot	613:2000 (Reaffrimed Year :2016) IS 10810:1984	613:2000 (Reaffrimed Year :2016) IS 10810:1984	Incoming Inspection	Р	R	R R R	0	
		Annealing Test for Copper	Mechanical		(Reaffrimed Year: 2016), ASTM B233	(Reaffrimed Year: 2016), ASTM B233	Records					
	e ·	Chemical Composition	Chemical Test		ASTWIB233	A3 1M B233			*			
		Tensile Strength	Mechanical ,									
		Elongation at break & Under Load	Mechanical		IS 7098 Part 2 :2011	IS 7098 Part 2 :2011	Vendor Test Certficates /					
2	XLPE Compound	Thermal Stability	Thermal Test	Each Lot	(Reaffrimed Year :2021) &	(Reaffrimed Year :2021) &	Incoming	Р	R	R		
		Hot Set & Permanent Set	Mechanical		ASTM D-257	ASTM D-257	Inspection Records					
		Volume Resistivity	Electrical Tests				71000143					
	12	Grade of Compound	Visual				Vendor Test Certficates /					
3	Insulating Semi-conducting Compound	Chemical Composition	Chemical Test	Each Lot	Manufacturing Standard	Manufacturing Standard	Incoming	Р	R	R		
		Mechanical & Electrical Properties	Mechanical & Electrical Test				Inspection Records					
	×	Tensile Strength & Elongation	Mechanical						,			
		Thermal Stability	Thermal Test		IS 7098 Part 2 :2011	IS 7098 Part 2 :2011	Vendor Test Certficates /					
4	Sheathing Compound PVC Type	Loss of mass	Thermal Test	Each Lot	(Reaffrimed Year :2021) &	(Reaffrimed Year :2021) &	Incoming	Р	R	R		
		Thermal ageing test	Thermal Test		ASTM D-257	ASTM D-257	Inspection Records					
		Volume resistivit	Electrical Tests									
		Dimensions	Measurement									
		Tensile Strength & Elongation	Mechanical									
	ж ,	Uniformity of Zinc Coating	Chemical Test				Vendor Test					
5	Armours (Galvanised Steel Flat	Mass of Zinc Coating	Chemical Test	1 Coil per Material Lot	IS 3975:1999 (Reaffrimed	IS 3975:1999 (Reaffrimed	Certicates /	P				
3	Strip / Wire)	Chemical Composition	Chemical Test	1 Coll per Material Lot	Year :2014)	Year :2014)	Incoming Inspection	P	R	К	6	
		Dip Test	Chemical Test				Records				*	
		Wrapping/Winding Test	Flame Test						*			
		Resistivity	Electrical Tests				*			1		
		Dimensions & Surface Finish	Visual & Measurement				Vendor Test Certficates /		5			
6	Copper Tape	Chemical Composition	Chemical Test	One Sample per Lot	EN 10204-3.1	EN 10204-3.1	Incoming	Р	R	R		
		Mechanical & Electrical Properties	Mechanical & Electrical Tests				Inspection Records					

			EQUIPMENT: HT Cable (11 K	V-E)			Project:						
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E-0	14			Client: RAJASTHA	N URBAN INFRA	STRUCTURE D	EVELOPME	NT PROJECT		
	AAJAGDAAY CASAA ISAACSISCOTINE BEYELDESINE PALIECT		REV.NO: 00	9			Consultant: SHAH	TECHNICAL CO	NSULTANT (ST	C)			
	STC	e .	DATE:				Contractor:				***************************************		
		Specifical	ions: Approved Drawings/ Proje	ect Specifications/ IS 7098 Pa	rt-2:2011 (Reaffrimed Year :202	1) / Latest amendments							
								Insp	ecting Agency				
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client /	Remarks		
1	2	3	4	5	6	7	8	13	9		10		
n-proc	cess Inspection												
		Type & Diameter of Wire	Measurement	1 Sample / Bobbin									
		Tensile strength (Only for Aluminium)	Mechanical '	1 Sample / Bobbin						i			
7	Wire Drawing - Aluminium/	Elongation at Break (Only for Copper)	Mechanical	1 Sample / Bobbin	IS 8130:2013 (Reaffrimed	IS 8130:2013 (Reaffrimed	lassassas Barada				i		
	Copper	Wrapping Test (Only for Aluminium)	Mechanical	1 Sample / Bobbin	Year 2018) & IS 7098 Part 2	Year 2018) & IS 7098 Part 2	Inprocess Reports	Р	R	R	i		
		Resistivity	Electrical	1 Sample / Bobbin	7						i		
		Surface Finish	Visual & Physical	Continuous	1						i		
		Type of Conductor, Wire Diameter & No. of Strands	Visual & Measurement	Al Start Up									
		Sequence & Lay Direction	Visual	At Start Up	1						i		
8	Conductor Stranding -Aluminium	Shape of Conductor & Surface Finish	Visual	At Start Up	Approved Drawing & Manufacturers	Approved Drawing & Manufacturers Specification	Inprocess Reports	Р	R	R	i		
		Bunched Conductor Diameter	Physical & Measurement	At Start Up	Specification+F51:G69	Manufacturers Specification					i		
		Conductor Resistance	Electrical	Every Drum							ı		
		Type Of Compound	Visual '	At Start Up									
		Diameter Over Conductor	Measurement	Continuous	-			i i			i		
		Thickness of Conductor Screen, XLPE Insulation & Insulation Screen	Measurement	Every Drum							-		
9	Insulation	Diameter Over Insulation Screen	Measurement	Continuous	Approved Drawing &	Approved Drawing &	Inprocess Reports	P	R	R	i		
	Thursday Printer Designation of	Thickness Eccentricity & Core Ovality	Measurement	Every Drum	Manufacturers Specification	Manufacturers Specification	Inprocess reports		15		ı		
		Surface Finish & Length	Visual & Measurement	Continuous	1						i		
		Tensile strength and elongation at break	Measurement	Every Drum	7						i		
		Hot Set Test	Measurement	Every Drum	1						i		
		Type of Tape, Width & Thickness	Visual	At Start Up									
10	Tapping / Screening - Copper	No. of Tape, % Overlapping & Diameter Over Tape	Measurement	Continuous	Approved Drawing &	Approved Drawing &		P	_	_	i		
10	Таре	Direction of Taping	Visual	At Start Up	Manufacturers Specification	Manufacturers Specification	Inprocess Reports	(P	R	R			
		Core Identification Tape	Visual	Continuous				1			i		
		Core Sequence, Lay Direction & Length	Visual	At Start Up	Approved Drawing &								
11	Laying Up	Thickness of Tape, % Overlapping & Diameter Over Laidup Cores	Measurement	Continuous	Manufacturers Specification	Approved Drawing	Inprocess Reports	Р	R	R			
		Type Of Compound	Visual	At Start Up									
12	Inner Sheathing	Thickness & Diameter over Sheathing	Measurement	At Start Up	Approved Drawing &	Approved Drawing &	Inprocess Reports	Р	R	R	í		

Continuous

Visual

Colour & Surface Finish

STANDARD QUALITY ASSURANCE PLAN

			S	TANDARD QUALITY ASSU	RANCE PLAN						
			EQUIPMENT: HT Cable (11 I	(V-E)			Project :				×
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E-	04			Client: RAJASTHA	N URBAN INFRA	ASTRUCTURE D	EVELOPME	NT PROJECT
	PASASTRADA SHIGAA SHIPAAT TILASTINE DE VIZ CENNENE PROSECT		REV.NO: 00				Consultant: SHAH	TECHNICAL CO	NSULTANT (ST	C)	
	STO		DATE:				Contractor:				
		Specificat	ions: Approved Drawings/ Pro	ject Specifications/ IS 7098 Part	-2:2011 (Reaffrimed Year :202	1) / Latest amendments					
		*/			D.4. D			Ins	pecting Agency		
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client /	Remarks
1	2	3	4	5	6	7	8		9		10
	7	Dimension of Armour Wires / Strips & Finsih	Measurement	At Start Up							
	Armouring GI / Aluminium (Wire	No. of Armour Wires / Strips	Measurement	At Start Up	Approved Drawing &	A (B ' 6					
13	/ Strip)	Direction of Lay & Lay Length	Visual	100%	Manufacturers Specification	Approved Drawing & Manufacturers Specification	Inprocess Reports	P	R	R	
		Strip/Wire Welding	Visual	100%							
		Diameter Over Armour	Measurement	At Start Up							
		Material & Type of Compound	Visual	At Start Up							
14	Outer Sheath	Thickness & Overall Diameter	Measurement	At Start & End	Approved Drawing &	Approved Drawing &		_	_	_	
1.7	Outer Sheath	Colour & Surface Finish	Visual	Continuous	Manufacturers Specification	Manufacturers Specification	Inprocess Reports	P	R	R	
		Embossing	Visual	100%				8			
Routin	e Test						I.				
		Conductor Resistance Test	Electrical		IS 8130:2013 (Reaffrimed	IS 8130:2013 (Reaffrimed					
15	HT Cable	Partial Discharge Test	Electrical	100%	Year 2018) & IS 7098 Part	Year 2018) & IS 7098 Part	Internal Routine	Р	R	R	
		High Voltage Test	Electrical		2:2011 (Reaffrimed Year :2016)	2:2011 (Reaffrimed Year :2016)	Test Report			1	
Ассері	tance Test		-								
		Thickness of Insulation & Sheath (Inner & Outer)	Measurement								-
		Measurement of Eccentricity & Ovality, Stripability	Measurement	1							
		T.S. & Elongation at break for Insulation & Sheath	Mechanical	1					•		
		Overall Diameter, Type of Cable, Dimensions of Armour, Copper Tape, No. of Strands, Colors of Sheath, Thickness of Semi-Conductor Screen, Diameter over Armour & Inner Sheath	Visual & Mechanical	a .				r	ej		
		Insulation Resistance (Volume resistivity)	Electrical	Sampling Plan as per IS 7098	IS 7098 Part 2 IS 7098 Part 2	IS 7098 Part 2 IS 7098 Part 2					
16	HT Cable	High Voltage Test @ Room Temp, on full drum for 5 Min. & on sample length for 4 Hrs.	Electrical	Part 2 :2011 (Reaffrimed Year :2016) (Below Table)	:2011 (Reaffrimed Year :2016)	:2011 (Reaffrimed Year :2016)	Inspection Test Report	Р	w	w	
		Hot Set Test & Permanent Set for Insulation	Thermal	Amendment Number 2 :2022	,2010)	.2010)					
		Conductor Resistance Test at ambient temperature	Electrical			(8)					
		Partial Discharge Test	Electrical	1							
		Visual Check for Cable- Finish, Marking/Printing,Top & Bottom Length Verification	Visual & Physical	1							
		Visual Check - Drum Stenciling, Drum No., Quantity, Net & Gross Weight, Type & Size of Cable, Direction of Rotation	Visual & Physical				5				٠
Гуре Т	est		<u> </u>	4,						L	
-5-24		Annealing test (for copper)	Mechanical Test								
		Tensile test (for aluminium)	Mechanical Test	One sample from each Size &	IS 10810:1084 (D#-:	IS - 8430 2042 (D#-:					
17	Test On Conductor	Wrapping test (for aluminium)	Mechanical Test	Type per offered Lot	Year: 2016)	IS: 8130-2013 (Reaffrimed Year 2018)	Type Test Report	P	R	R	
	I .	The state of the s		200 10			1	1			

Electrical Test

Resistance test

RUIDE	-
Phonoi I man i mondo rise mondo por colore de constitucione e	resource

MANUFACTURER/ VENDOR:

STANDARD QUALITY ASSURANCE PLAN	
EQUIPMENT: HT Cable (11 KV-E)	Project:
QAP NO: Sid QAP/ 23-24/ E-04	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
DATE:	Contractor:

Specifications: Approved Drawings/ Project Specifications/ IS 7098 Part-2:2011 (Reaffrimed Year :2021) / Latest amendments

				н	Reference Document/	0	Format of	ins	pecting Agency		
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks
1	2	3	4	5	6_	7	8		9		10
		Dimensions	Measurement	1							
		Tensile strength	Mechanical Test	1							
	_	Elongation at break	Mechanical Test	_	IS 10810;1984 (Reaffrimed						
18	Tests for round steel wire/formed steel	Torsion test for round wires	Mechanical Test	One sample from each Size &	Year: 2016) IS 3975:1999 (Reaffrimed Year :2014)/IS	IS 692 & IS 7098 Part 2 :2011	Type Test Report	Р	R	R	
	wire (strip) armour	Winding test for formed wires	Mechanical Test	Type per offered Lot	4826:1975 (Reaffrimed year 2016)	(Reaffrimed Year :2016)				TPI 10	
		Uniformity of zinc coating	Chemical Test	1	2016)						
		Mass of zinc coating	Chemical Test								
		Resistivity	Electrical Test								
		Thickness & Eccentricity of Insulation	Measurement				Type Test Report				
19	Test for thickness of insulation and sheath	Ovality of Core	Measurement	One sample from each Size & Type per offered Lot	IS 10810:1984 (Reaffrimed Year: 2016)	IS 7098 Part 2 :2011 (Reaffrimed Year :2016)		P	R	R	
		Thcikness of Inner Sheath & Outer Shaeth	Measurement	15. • • • • • • • • • • • • • • • • • • •	12 december 200						
		Tensile strength and elongation at break	Measurement							1.	19
		Ageing in air oven	Mechanical Test		Adapt Dates to control of times that is all	. de 240000 00 00 00 00 00 00 00 00 00 00 00 0					
20	Physical tests for insulation	Hot set test	Mechanical Test	One sample from each Size & Type per offered Lot	IS 10810:1984 (Reaffrimed Year: 2016)	IS 7098 Part 2 :2011 (Reaffrimed Year :2016)	Type Test Report	Р	R	R	
		Shrinkage test	Mechanical Test]		(**************************************					
		Water absorption (gravimetric)	Electrical Test	1							
21	Tests on Extruded Semi-	Strippability Test	Mechanical	onical One sample from each Size & IS 10	IS 10810:1984 (Reaffrimed	IS 7098 Part 2 :2011	T T D	Р			
21	conducting Screen	Resistivity of Semi-conducting Screen	Electrical Test	Type per offered Lot	Year: 2016)	(Reaffrimed Year :2016)	Type Test Report	P	R	K	
		Tensile strength and elongation at break	Measurement								
		Ageing in air oven	Mechanical Test	1							
		Loss of mass in air oven	Mechanical Test]			-				
22	Physical tests for outer sheath	Shrinkage test	Mechanical Test	One sample from each Size &	IS 10810:1984 (Reaffrimed	IS 5831:1984 (Reaffrimed	T T 10	P	R		
22	Filysical tests for outer sheath	Hot deformation	Thermal Test	Type per offered Lot	Year: 2016)	Year:2016)	Type Test Report	P	ĸ	K	
		Heat shock test	Thermal Test	1				,			
		Thermal stability	Thermal Test	1			-				
		Flamability Test on Single Cable	Flame Test	1							
23	Partial discharge (PD) test	Quality of Insulation	Electrical Test				Type Test Report	Р	R	R	
24	Bending test followed by PD	Bending as 20D ± 5%	Mechanical Test	1			Type Test Report	Р	R	R	
05		As a function of voltage	Electrical Test	1		.,,		_		_	
25	Dielectric power factor (DPF) test	As a function of temperature	Electrical Test	One sample from each Size &	IC 10910:1094 (Beeff	IS 7098 Part 2 :2011	Type Test Report	Р	R	R	
26	Insulation resistance (volume resistivity test)	Measurement of Insulation resistance	Electrical Test	Type per offered Lot	Year: 2016)	(Reaffrimed Year :2016)	Type Test Report	Р	. R	R	
27	Heating cycle test followed by DPF & PD	Heal Cycles	Electrical Test				Type Test Report	Р	R	R	

(ACM Sharps

		y		STANDARD QUALITY ASSU	RANCE PLAN									
			EQUIPMENT: HT Cable (11	KV-E)			Project :							
	RUIDP	IWANOFACTORER VENDOR.	QAP NO: SId QAP/ 23-24/ E	-04		-	Client: RAJASTHA	N URBAN INFRA	ASTRUCTURE D	EVELOPME	NT PROJECT			
	MALACTIAN CONTACTOR CONTENTION OF THE PROPERTY PROPERTY OF THE PROPERTY OF T		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)						
	BILO		DATE:				Contractor:							
		Specificati	ons: Approved Drawings/ Pro	oject Specifications/ IS 7098 Part	-2:2011 (Reaffrimed Year :202	1) / Latest amendments	L							
					Reference Document/		Format of	Ins	pecting Agency					
S.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks			
1	2	3	4	5	6	7	8		9		10			
28	Impulse withstand test	Dielectric Test	Electrical Test				Type Test Report	Р	R	R	46			
29	High voltage test	High voltage test for 4 Hrs.	Electrical Test				Type Test Report	Р	R	R				
		Oxygen & Temperature Index Test	Flame Test		ASTM D 2863	29.0 % Min. at 27±2°C & 250° Min.								
		Smoke Density Rating	Flame Test		ASTM D 2863	60 % Max. Light Absorption								
	'	HCL Acid Gas Evolution Test	Chemical Test		IEC 60754-1	20 % Max. by weight								
30	FR/FRLS Test on PVC Outer Sheath	Flammability Test on Single Verticle Cable & Bunched Cable	Flame Test .	One sample from each Size & Type per offered Lot	IS 10810:1984 (Reaffrimed Year: 2016) Part-53	Un-affected Length from from the lower edge of the top clamp- 50 mm (Min.) & Burning less than 60 Sec after removal of Flame	Type Test Report	P	R	R				
		Swedish Chimney Test (As applicable)	Flame Test		SS 424-14-75 Class F3	SS 424-14-75 Class F3								
		Anit-Rodent & Termite Repulsion Test	Chemical Test		Ammonium Accetate of PVC compound turns sodium sulphide solution Black	Presence of Lead in PVC		V I						

	S	Sampling of Cable Drums									
	No. of Drums In the Lot	No. of Drums to be Taken as Sample	Permissible No. of Defectives								
	Up to 25	3	0								
Note:	26 to 50	5	0								
	51 to 100	8	0								
	101 to 300	13	1								
	301 and above	20	1								

P- Perform	R-Review of Documents	TPIA-Third Party Inspection Agency	W- Witness	OEM- Original Equipment Manufacturer		
Manufacturer / Vendor	Contra	Client/ TPIA				
Signature:	Signature:		Signature:			
Name:	Name:		Name:			

				STANDARD QUALIT	Y ASSURANCE PLAN								
	1111111 II		EQUIPMENT: XLPE/ PVC Insu	ulated Cable Upto and Including	Project :								
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E-05					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
			REV.NO: 00	ds.			Consultant: SHAH T	ECHNICAL CONSU	JLTANT (STC)				
	B'A'U		DATE:	77-2			Contractor:		0				
			L Specifications: Approved Drawir	ngs/ Project Specifications/ IS 7	098 Part-1:1988 (Realfrimed Yea	ar :2020) and Latest amendme	nts						
					Reference Document/		Format of	Inspecting Agency					
.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks		
1	2 ing Raw Materials	3	4	5	6	7	8		9		10		
OIII	ing Raw Materials	Surface Finish & Diameter	Visual & Measurement						I				
	100	Tensile strength ((Only for Aluminium)	Mechanical		IS 4026:2007 (Reaffrimed	IS 4026:2007 (Reaffrimed							
		Elongation at Break (Only for Copper)	Mechanical	1	Year:2017), IS 5484:1997 (Realfrimed Year :2017), IS	Year:2017), IS 5484:1997 (Realfrimed Year:2017), IS 613:2000 (Realfrimed Year :2016) IS 10810:1984 (Realfrimed Year: 2016), ASTM B233	Vendor Test Certlicates /	Р	R				
1	Aluminium / Copper Wire Rod	Conductivity/ Resistivity	Electrical Tests	1 Coil per Material Lot	613:2000 (Reaffrimed Year :2016) IS 10810:1984		Incoming			R			
		Annealing Test for Copper	Mechanical		(Reaffrimed Year: 2016), ASTM B233		Inspection Records						
		Chemical Composition	Chemical Test										
		Tensile Strength	Mechanical				 	-					
2		Elongation at break & Under Load	Mechanical				Vendor Test	Р					
	XLPE Compound for Insulation	Thermal Stability	Thermal Test	Each Lot	IS 7098, IS 10810:1984 (Reaffrimed Year: 2016) &	IS 7098, IS 10810:1984 (Reaffrimed Year: 2016) &	Certficates / Incoming		R	R			
		Hot Set & Permanent Set	Mechanical	20011201	ASTM D-257	ASTM D-257	Inspection			"			
		Electrical Properties	Electrical Tests	1		2	Records						
_		Tensile Strength & Elongation	Mechanical	Each Lot	IS 7098, IS 10810:1984 (Realfrimed Year: 2016) & ASTM D-257								
		Thermal Stability	Thermal Test			IS 7098, IS 10810:1984 (Realfrimed Year: 2016) & ASTM D-257				1 1			
		Oxygen & Temperature Index Test	Flame Test				Vendor Test Certficates / Incoming Inspection Records		R	1 1			
	Sheathing Compound PVC Type	Smoke Density Rating	Flame Test					P		R			
		Flamability Test	Flame Test										
		HCL Acid Gas Evolution Test	The state of the s	-									
		Dimensions	Chemical Test Measurement										
		Tensile Strength & Elongation											
		Uniformity of Zinc Coating	Mechanical Chemical Test										
		Mass of Zinc Coating			IS 10810:1984 (Reaffrimed Year: 2016)/IS 3975:1999	IS 10810:1984 (Reaffrimed Year: 2016)/IS 3975:1999	Vendor Test Certficates /						
	Armours (Galvanised Steel Flat Strip / Wire)		Chemical Test	1 Coil per Material Lot	(Reaffrimed Year :2014)/IS	(Reaffrimed Year :2014)/IS	Incoming	P	R	R			
		Chemical Composition Dip Test	Chemical Test		4826:1975 (Reaffrimed year 2016)	4826:1975 (Reaffrimed year 2016)	Inspection Records			[1			
			Chemical Test										
		Wrapping/Winding Test Resistivity	Flame Test	-									
	cass Inspection	ILESISHARA	Electrical Tests	L									
pro	cess Inspection	Time & Diameter of Win				T			ı				
		Type & Diameter of Wire	Measurement	1 Sample / Bobbin	-				,		,		
		Tensile strength (Only for Aluminium)	Mechanical	1 Sample / Bobbin	-								
5	Wire Drawing - Aluminium/ Copper	Elongation at Break (Only for Copper)	Mechanical	1 Sample / Bobbin	IS 8130:2013 (Reaffrimed Year 2018) & IS 7098 Part 1	IS 8130:2013 (Reaffrimed Year 2018) & IS 7098 Part 1	Inprocess Reports	P	R	R			
		Wrapping Test (Only for Aluminium)	Mechanical	1 Sample / Bobbin		. car avioj a la roso Fall I							
		Resistivity	Electrical	1 Sample / Bobbin	1								
	L	Surface Finish	Visual & Physical	Continuous		1							

STANDARD QUALITY ASSURANCE PLAN EQUIPMENT: XLPE/ PVC Insulated Cable Upto and Including 1100V Project: MANUFACTURER/ VENDOR: Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT QAP NO: Std QAP/ 23-24/ E-05 REV.NO: 00 Consultant: SHAH TECHNICAL CONSULTANT (STC) DATE: Contractor Specifications: Approved Drawings/ Project Specifications/ IS 7098 Part-1:1988 (Reaffrimed Year: 2020) and Latest amendments Inspecting Agency Reference Document/ Format of S.No Item/ Component & Operation Characteristics Type of Check Quantum of Check Acceptance Norms Vendor/ Sub Remarks Standards Records Contractor Client / TPI Vendor 4 10 Type of Conductor, Wire Diameter & No. of Strands Visual & Measurement At Start Up Sequence & Lay Direction Visual At Start Up Conductor Stranding -Aluminium Approved Drawing & Approved Drawing & 6 Inprocess Reports R R Shape of Conductor & Surface Finish Copper Visual At Start Up Manufacturers Specification Manufacturers Specification Bunched Conductor Diameter Physical & Measurement At Start Up Conductor Resistance Electrica Every Drum Type Of Compound At Start Up Visual Diameter Over Conductor & Core Measurement Continuous Thickness of Insulation Measurement Every Drum Spark Test Measurement Continuous Approved Drawing & Approved Drawing & Insulation Inprocess Reports R Manufacturers Specification Manufacturers Specification Surface Finish & Length Visual & Measurement Continuous Volume Resistivity Electrical Test **Electrical Test** Tensile strength and elongation at break Every Drum Measurement Hot Set Test Every Drum Measurement Core Sequence, Core Identification, Lay Direction & Visual At Start Up Approved Drawing & 8 Laying Up Approved Drawing Inprocess Reports Р Manufacturers Specification Diameter Over Laidup Cores Measurement Continuous Type of Compound & Sheathing Visual At Start Up Approved Drawing & Approved Drawing & 9 Inner Sheathing Thickness & Diameter over Sheathing Measurement At Start Up Inprocess Reports P R R Manufacturers Specification Manufacturers Specification Colour & Surface Finish Visual Continuous Dimension of Armour Wires / Strips & Finsih Measurement At Start Up No. of Armour Wires / Strips Measurement At Start Up Armouring GI / Aluminium (Wire / Direction of Lay & Lay Length Approved Drawing & Approved Drawing & 10 100% R R Visual nprocess Reports Manufacturers Specification Manufacturers Specification Strip/Wire Welding Visual 100% Diameter Over Armour Measurement At Start Up Material & Type of Compound Visual At Start Up Thickness & Overall Diameter At Start & End Measurement Approved Drawing & Approved Drawing & 11 Outer Sheath R nprocess Reports R Manufacturers Specification Manufacturers Specification Colour & Surface Finish Visual Continuous Embossing 100% Visual Routine Test IS 8130:2013 (Reaffrimed IS 8130:2013 (Reaffrimed Conductor Resistance Test Electrical

Year 2018) & IS 7098 Part

1:1988:Reaffrimed Year

:2020) / IS 1554P-1:1988

100%

Electrical

12

LT Cable

High Voltage Test

Year 2018) & IS 7098 Part

1:1988:Reaffrimed Year

:2020) / IS 1554P-1:1988

Internal Routing

Test Report

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				STANDARD QUALIT	Y ASSURANCE PLAN									
		1	EQUIPMENT: XLPE/ PVC Ins	sulated Cable Upto and Including	1100V		Project:							
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E-	05	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT									
	Accordance of the control of the con		REV.NO: 00	***	-		Consultant: SHAH	FECHNICAL CONS	ULTANT (STC)	9				
	DIU		DATE:				Contractor:		80					
			Specifications: Approved Drawi	ings/ Project Specifications/ IS 70	98 Part-1:1988 (Reaffrimed Yea	ar :2020) and Latest amendmen	nts		Inspecting Agency					
-								Ins	specting Agency	y				
.No	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/ Standards	Acceptance Norms	Format of Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks			
1	2	3	4	5	6	7	8		9	<u>' </u>	10			
ep	ance Test	1								T				
		Annealing test (for copper) *	Mechanical Test	-										
		Tensile test (for aluminium) *	Mechanical Test	4										
		Wrapping lest (for aluminium) *	Mechanical Test	1										
		Thickness of Insulation & Sheath (Inner & Outer)	Measurement		-					12.				
		T.S. & Elongation at break for Insulation & Sheath	Mechanical	_			::	Р						
		Overall Diameter, Type of Cable, Dimensions of Armour, No. of Strands, Colors of Sheath, Diameter over Armour & Inner Sheath	Visual & Mechanical		IS 7098 Part 1:1988: Reaffrimed Year :2020) / IS 1554P-1:1988 (Reaffrimed	IS 7098 Part 1:1988: Reaffrimed Year :2020) / IS 1554P-1:1988 (Reaffrimed	Inspection Test Report		w					
3	LT Cable	Insulation Resistance (Volume resistivity)	Electrical	Sampling Plan as per IS 7098 Part 1/ IS 1554P-1						w				
		High Voltage Test 3kV (AC) @ Room Temp. on full drum for 5 Min.	Electrical		Year:2020)	Year:2020)					_			
		Hot Set Test & Permanent Set for XLPE insulation	Thermal	1		100								
		Conductor Resistance Test at ambient temperature	Electrical											
		Visual Check for Cable- Finish, Marking/ Printing, Top & Bottom Length Verification	Visual & Physical											
		Visual Check on Drum Stenciling, Drum No., Quantity, Net & Gross Weight, Type & Size of Cable, Direction of Rotation	Visual & Physical											
e T	est	1		-l					1	1				
1		Overall Diameter	Measurement	One sample from each Size & Type per offered Lot	As per approved Drawing	As per approved Drawing	Type Test Report	Р	R	R				
		Annealing test (for copper)	Mechanical Test	Type per offered Lot										
	T-00-C	Tensile test (for aluminium)	Mechanical Test	One sample from each Size &	IS 10810:1984 (Reaffrimed Year: 2016)	IS 8130:2013 (Reaffrimed Year 2018)	Type Test Report	P						
5	Test On Conductor	Wrapping test (for aluminium)	Mechanical Test	Type per offered Lot					R	R				
		Resistance test	Electrical Test	1										
_		Dimensions	Measurement						0.000					
		Tensile strength	Mechanical Test	1							,			
		Elongation at break	Mechanical Test	1							4			
	Tests for round steel wire/formed	The state of the s	Mechanical Test	1	IS 10810;1984 (Reaffrimed									
õ	steel wire (strip) armour	Winding test for formed wires	Mechanical Test	· ·	Year: 2016) , IS 3975 & IS 4826		Type Test Report	Р	R	R				
	mis (sup) amou	Uniformity of zinc coating	Chemical Test	1	7020				5					
		Mass of zinc coating	Chemical Test	-		IS 7098 Part 1:1988:								
		Resistivity	Electrical Test	One sample from each Size & Type per offered Lot		Reaffrimed Year :2020) / IS 1554P-1:1988 (Reaffrimed					}			
,	Test for thickness of insulation	and and a second		-		Year:2020)			-	 				
7	and sheath	Thickness of Inner Sheath & Outer Sheath	Measurement	-			Type Test Report	Р	R	R				
		Tensile strength and elongation at break	Measurement	4				<i>J</i> *						
		Ageing in air oven	Mechanical Test	4	IS 10810:1984 (Reaffrimed Year: 2016)			See .			¥			
18	Physical tests for insulation	Hot set test	Mechanical Test		100.2010)		Type Test Report	Р	R	R				
	<u> </u>	Shrinkage test	Mechanical Test	_										
		Water absorption (gravimetric)	Electrical Test	I.		I			1	1 1				

				STANDARD QUALITY	Y ASSURANCE PLAN										
EQUIPMENT: XLPE/ PVC Insulated Cable Upto and Including 1100V									Project :						
	RUIDP	MANUFACTURER/ VENDOR:	QAP NO: Std QAP/ 23-24/ E-	05			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT								
			REV.NO: 00				Consultant: SHAH T	ECHNICAL CONS	ULTANT (STC)						
			DATE:				Contractor:								
	1	S	pecifications: Approved Drawi	ngs/ Project Specifications/ IS 70	98 Part-1:1988 (Realfrimed Ye	ar :2020) and Latest amendmen	its								
	Item/ Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document/	-	Format of		specting Agency						
	•				Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks				
1	2	3	4	5	6	7	8		9		10				
1		Tensile strength and elongation at break	Measurement						1						
		Ageing in air oven	Mechanical Test						1						
		Loss of mass in air oven	Mechanical Test	1	IS 10810:1984 (Reaffrimed Year: 2016)	IS 5831:1984:(Reaffrimed		Р	R						
	Physical tests for outer sheath	Shrinkage test	Mechanical Test	-											
19		Hot deformation	Thermal Test			Year:2016)	Type Test Report			R					
		Heat shock test	Thermal Test	One sample from each Size &											
		Thermal stability	Thermal Test	Type per offered Lot					1						
		Flamability Test on Single Cable	Flame Test												
20	Insulation resistance (volume resistivity test)	Measurement of Insulation resistance	Electrical Test				IS 7098 Part 1:1988;	Type Test Report	Р	R	R				
21	High voltage test	High voltage test - 3kV (AC) for 5 Min	Electrical Test			Reaffrimed Year :2020) / IS 1554P-1;1988 (Reaffrimed	Type Test Report	Р	R	R					
22	Flamability test	Burning Test	Flame Test			Year:2020)	Type Test Report	Р	R	R					
		Oxygen & Temperature Index Test	Flame Test		ASTM D 2863	29.0 % Min. at 27±2°C & 250° Min.									
		Smoke Density Rating	Flame Test		ASTM D 2863	60 % Max. Light Absorption				· ·					
		HCL Acid Gas Evolution Test	Chemical Test		IEC 60754-1	20 % Max. by weight									
23	FR/FRLS Test on PVC Outer Sheath (If Applicable)	Flammability Test on Single Verticle Cable & Bunched Cable	Flame Test	One sample from each Size & Type per offered Lot	IS 10810 Part-53	Un-affected Length from Top - 50 mm (Min.) & Burning less than 60 Sec after removal of Flame	Type Test Report	Р	R	R					
		Swedish Chimney Test (As applicable)	Flame Test		SS 424-14-75 Class F3	SS 424-14-75 Class F3									
		Anit-Rodent & Termite Repulsion Tost	Chemical Test		Ammonium Accetate of PVC compound turns sodium sulphide solution Black	Presence of Lead in PVC			2						
		P- Perform	R-Review o	nspection Agency	W- Witness		OEM- Original E	ulpment Manufac	turer						
	Man	ufacturer / Vendor		Contr	ractor	- 22 - 20 - 2			Client/ TPIA						
Signature: Signature:					Signaturo:										

MANUFACTURER/ VENDOR: Specifications: Approved Drawings/

STANDARD QUALITY ASSURANCE PLAN	
 EQUIPMENT: DG Sets	Project:
QAP NO: Std QAP/ 23-24/ E-06	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
, REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
DATE:	Contractor:

Specifications: Approved Drawings/ Project Specifications/ CPCB Norms/ BS 5514/ IS:10000:1980 and Latest amendments

	Item/ Component &			Quantum	Reference Document/	nt/	Format of	Inspecting Agency		су		
S.No	Operation	Characteristics	Type of Check	of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks	
1 1 0 0 0	2 W MATERIAL	3	4	5	6	7	8		9		10	
1.1	PUNCHED MATERIAL/ CRCA SHEET	Visual & Dimensions	Measurement	100%	Approved GTP/ Drawing Manufacturer's Spec.	Approved GTP/ Drawing Manufacturer's Spec.	Incoming Check Sheet	Р	R	R	Supplier TC shall be provide for review	
1.2	ENGINE	Engine Name Plate i.e Manufacturer Name Label with HP, RPM, S. No & Model	Visual '	100%	Approved GTP/ Drawing BS 5514/ IS:10000:1980	Approved GTP/ Drawing BS 5514/ IS:10000:1980 Approved GTP/	Test Certificate	Р	R	R	Engine Manufacturer's Routine Test Certificate shall be provided for review during inspection	
1.3	ALTERNATOR	H.V. TEST. REGULATION TEST, STATOR AND ROTOR WINDING RESISTANCE AND INSULATION RESISTANCE TEST	Visual	100%	Approved G 1F7 Drawing IS:4722/BS 2613/	Drawing IS:4722/BS 2613/	Test Certificate	Р	R	R	Alternator's manufacturer's test certificate shall be provided for review during inspection	
1.4	BASE FRAME	Dimensions & Mercury Level	Visual	100%			Incoming Check Sheet	Р	R	R		
1.5	FUEL TANK	Capacity & Leakage	Measurement	100%			Incoming Check Sheet	Р	R	R		
1.6	STUFFING MATERIAL	Foam/Rockwool- Thickness	Measurement	100%	Approved GTP/ Drawing	Approved GTP/ Drawing	Incoming Check Sheet	Р	R	R		
1.7	BATTERY	Make & Rating	Visual	100%			warranty certificates	Р	R	R	Battery warranty certificates to be submitted during inspection	
1.8	CONTROL PANEL	Make, Visual, BOM, Rotine test	Measurement	100%			Panel routine TC	Р	R	R		
2.0 In-F	rocess											
		 a. Check all the components of punching before bending 	Measuring tape /	1 100%		Approved GTP/ Drawing Manufacturer's Spec.						
0.4	BENDING	 b. Check the appropriate part for bending with respective Drawing Ref No. 			Approved GTP/		In-process Check Sheet					
2.1	BENDING	c. Check the bend angle & overall dimension of first piece of similar components			% Drawing Manufacturer's Spec.			Р	R	R		
		d. Check the bended component for any bending gap, uneven bending etc	u u								_	
		 a. Check the components, frame, channels are welded as per specified dimension 			,,							
2.2	FABRICATION	 b. Check the welding gap, welding run, uniformity of welding joint 	Measuring tape / Template/ Visual	100%	Approved GTP/	Approved GTP/		Р	R	R		
		c. Check for Burn through and Outer faces of welded joints are properly grinded			Drawing Manufacturer's Spec.	Drawing Manufacturer's Spec.	In-process Check Sheet					
2.3	Accessories fittings, Hose connection	Loose fittings & BOM completeness	Visual	100%	,							
2.4	Fuel, Water, Lub oil leakages	Filment checked properly and ensure no any leakages	Visual	100%								
		a. Cross cut Adhesion Test on powder coated finished component	Cross Cut cutter/		GT=0/100	GT=0/100	Incoming Check Sheet					
2.5	PAINTING	b. Dry Film Thickness of the power coated finished component	DFT meter	2 times a	Plain Powder 60 -80 Micron Metre DFT	Plain Powder 60 -80 Micron Metre DFT	Incoming Check Sheet	Р	R	R		

				STANDARD	QUALITY ASSURANCE	PLAN					3	
		MANUFACTURER/ VENDOR:		E	QUIPMENT: DG Sets		Project:					
	RUIDP	MANUFACTUREN VENDOR.		QAP I	NO: Std QAP/ 23-24/ E-06	3	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
	STC				REV.NO: 00		Consultant: SHAH	TECHNICAL C	CONSULTAN	T (STC)		
					DATE:		Contractor:					
		Specificaţions: Approv	ved Drawings/ Pro	ject Specific	ations/ CPCB Norms/ BS	5514/ IS:10000:1980 and	d Latest amendmen	nts				
S.No	Item/ Component &	Characteristics	Type of Check	Quantum	Reference Document/	Acceptance Norms	Format of		ecting Agen			
1	Operation			of Check	Standards	Acceptance Norms	Records	Vendor/ Sub Vendor	Contractor	Client / TPI	Remarks	
	2	3	4	5	6	7	8		9		10	
		c. Check the Impact Test for powder coated test panel	Impact Testor		peel off & Crack to Powder coating Film)	100 Kg- Cm impact (No peel off & Crack to Powder coating Film)	Incoming Check Sheet					
3.0 FIN	AL INSPECTION											
		Verification of Engine, Alternator & Battery - Make, Model & Rating	Physical	100%			Inspection Report	Р	w	W		
		DG set is run for 10 min. to verify leakages and any abnormal sound	Physical	100%		-	Inspection Report	Р	w	W		
	TEST ON ASSEMBLED DG SET	Load Test On DG Set: Starting the DG Set and putting the load after speed reaches to 1500 RPM & 415 Volts 25% Load - 10 Minute 50% Load - 10 Minute 75% Load - 15 Minute 100% Load - 30 Minute 110% Load - 10 Minute	Electrical	100%	Approved GTP/ Drawing/ Manufacturer's Standard/ CPCB Norms		Inspection Report	Р	w	w	DG SET PERFORMANCE PARAMETERS LIKE VOLTAGE, HZ, AMP., KW, PF, COOLANT TEMP., LUB. OIL PRESSURE., ETC. SHALL BE RECORDED DURING TRIAL RUN.	
3.1		Voltage regulation & Governing	Electrical	100%			Inspection Report	Р	R	R	Test Certificate Review	
		Vibration Test on & below AVM Pads at No Load & 100% load	Measurement	100%			Inspection Report	Р	w	w	,	
		Noise Level at 100% Load & Emission	Measurement	100%			Inspection Report	Р	R	R	Test Certificate from Designated Nodal Agency shall be provided.	
		Fuel Consumption at 75% & 100% Load	Measurement	100%			Inspection Report	Р	w	W .	By Crude Oil Method ot Differential Level Method	
		Paint shade Verification	Physical,	Random sample	Approved Drawings	Approved Drawings	Inspection Report	Р	w	w		
		Paint thickness	Visual/ Measurment	Random sample	Approved Drawings	Approved Drawings	Inspection Report	Р	w	W		
		Dimension and BOM For DG Set	Visual/ Measurment	One Sample/Ra ting	Approved Drawings/BOM	Approved Drawings/BOM	Inspection Report	Р	w	w		
3.2	Control Panel	Control Panel- Visual, Dimesion, BOM, IP Certification, Operation & Functional Check during DG set test run.	Electrical	100%	Approved GTP/ Drawing/ Manufacturer's	Approved GTP/ Drawing/ Manufacturer's	Inspection Report	Р	w	w	Test Certificate Review	
		P- Perform	R-Review of D	ocuments	TPIA-Third Party I	nspection Agency	W- Witness		OEM- Origi	nal Equipm	ent Manufacturer	
Manufacturer / Vendor				Contractor		74-0		Client	TPIA			
Signature:				Signature:		Signature:						
Name:					Name:	Name:						