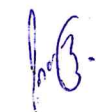


List of Standard Quality Assurance Plan for Instrumentation Equipment

S. NO.	QAP No.	QAP Description	No. of Sheets
1	I-01	Conductivity Level Switch	1
2	I-02	Electromagnetic Flow Meter	2
3	I-03	Ultrasonic Level Transmitter	1
4	I-04	Loss of Head Indicator	1
5	I-05	Rate of Flow Indicator	1
6	I-06	Ultrasonic Open channel flow Transmitter	1
7	I-07	Pressure Switch	1
8	I-08	Instrumentation Cables	7
9	I-09	Water Quality Analysers	1
10	I-10	UPS System	3
11	I-11	PLC & SCADA System FAT	14
12	I-12	Pressure Transmitter	1



STANDARD QUALITY ASSURANCE PLAN											
 		Manufacturer's Name & Address:		Equipment: Conductivity Level Switch				Project:			
				DOC NO: Std.QAP/23-24/I-01				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:				Contractor:			
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency			Remark
1.0.0	Mechanical Components							M	C	N	
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal / Vendor Inspection report	P	V	-	
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-	
1.2.0	Machining	Free from dents & burrs, Surface finish	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-	
1.3.0	Painting	Paint shade and paint finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal / Vendor Inspection report	P	-	-	
2.0.0	Electronic Components	Specification Details: Make, Type No. & Packing	Visual	100%	Component data sheet/ P.O. / Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	-	-	Inspection report for all the components shall be provided for review.
2.0.1		Functional test	Electrical	Sampling plan							
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Finished Product Test Certificate	P	W	W	10% or one random sample of each size shall be offered for functional / calibration check during inspection.
3.0.1		Functional test on table	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure					
4.0.0	Degree of Protection	IP-65	Type test	Prototype	IS / IEC 60529	IS / IEC 60529	Type test report	P	-	-	
			LEGENDS:								
			M: Manufacturer								
			N: Customer								
			C: Contractor/TPIA								
			P: Perform								
			W: Witness								
			V: Verification of documents								
Manufacturer		Contractor		Reviewed By:			Customer Approval				
SIGNATURE						Name & Signature of Approving Authority					

Note:

- 1 Reference Documents will be available at the time of inspection for verification.
- 2 SP - Sampling Plan as per IS: 2500
- 3 TPIA - Third Party Inspection Agency
- 4 Applicable formats to be referred during inspection.



STANDARD QUALITY ASSURANCE PLAN											
	Manufacturer's Name & Address:		Equipment: Electromagnetic Flowmeter				Project:				
			DOC NO: Std.QAP/23-24/I-02				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:				Contractor:				
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency			Remark
								M	C	N	
1.0.0	Mechanical Components										
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal/Vendor test report	P	V	V	
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal/Vendor test report	P	V	V	
1.2.0	Machining	Dimensional	Measurement	Sampling plan	Manufacturer's Drawings	Conformance to Drawings	Internal/Vendor test report	P	V	V	
1.2.1		Free from dents & burrs, Surface finish	Visual	100%	Inspection Instructions	Conformance to instructions	Internal/Vendor test report	P	V	V	
1.3.0	Painting	Paint shade and paint finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal/Vendor test report	P	V	V	
2.0.0	Electronic Components	Specification Details: Make, Type No. & Packing	Visual	100%	Component data sheet/P.O./ Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	V	V	Inspection report for all the components shall be provided for review.
2.0.1		Functional test (If needed)	Electrical	Sampling plan							
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Finished Product Test Certificate	P	W	W	10% or one random sample of each size shall be offered for functional / calibration check during inspection.
3.0.1	3-point water calibration	Functional / Calibration Check at Flow Rig	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure					
	Hydrostatic Pressure Test	Pressure test	Hydrostatic test	100%	Approved datasheets	Conformance to Test Procedure	Finished Product Test Certificate				
3.1.1	Degree of Protection (Remote Version)	IP 67 / IP 68 for electronic housing	Type test	Prototype	IS / IEC 60529	IS / IEC 60529	Type test Report	P	V	V	
		IP 67 / IP 68 for sensor	Type test	Prototype	IS / IEC 60529	IS / IEC 60529	Type test report	P	V	V	
3.1.2	Degree of Protection (Integral Version)	IP 67 / IP 68	Type test	Prototype	IS / IEC 60529	IS / IEC 60529	Type test Report	P	V	V	
3.1.3	Testing and Measuring	Review of calibration certificates of instrument	Review	100%	NABL Calibration Certificates	NABL Calibration Certificates	Calibration Certificates	P	V	V	

STANDARD QUALITY ASSURANCE PLAN												
	Manufacturer's Name & Address:		Equipment: Ultrasonic Level Transmitter				Project:					
			DOC NO: Std.QAP/23-24/I-03				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
			REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)					
			DATE:				Contractor:					
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency			Remark	
1.0.0	Mechanical Components							M	C	N		
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal / Vendor Inspection report	P	-	-		
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-		
1.2.0	Machining	Dimensional	Measurement	Sampling plan	Manufacturer's Drawings	Conformance to Drawings	Internal/Vendor test report	P	-	-		
1.2.1		Free from dents, burrs & no missing operation	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-		
1.3.0	Painting	Paint shade and Surface finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal / Vendor Inspection report	P	-	-		
2.0.0	Electronic Components	Specification Details: Make, Type No.& Packing	Visual	100%	Component data sheet/ P.O./ Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	-	-	Inspection report for all the components shall be provided for review.	
		Functional test (If needed)	Electrical	Sampling plan								
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Finished Product Test Certificate	P	W	W	10% or one random sample shall be offered for functional check during inspection	
3.0.1		Functional Check	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure						
4.0.0	Degree of Protection	IP-67	Type test	Prototype	IS 13947 (Part 1)	IS 13947 (Part 1)	Type test report	P	V	V		
Manufacturer Contractor			LEGENDS: M: Manufacturer N: Customer C: Contractor/TPIA P: Perform W: Witness V: Verification of documents			Reviewed By:			Customer Approval			
									SIGNATURE			Name & Signature of Approving Authority

Note:

- 1 Reference Documents will be available at the time of inspection for verification.
- 2 SP - Sampling Plan as per IS: 2500
- 3 TPIA - Third Party Inspection Agency
- 4 Applicable formats to be referred during inspection.

B.

STANDARD QUALITY ASSURANCE PLAN											
	Manufacturer's Name & Address:		Equipment: Loss of Head Indicator				Project:				
			DOC NO: Std.QAP/23-24/I-04				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:				Contractor:				
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency			Remark
							M	C	N		
1.0.0	Mechanical Components										
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal / Vendor Inspection report	P	-	-	
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-	
1.2.0	Machining	Dimensional	Measurement	Sampling plan	Manufacturer's Drawings	Conformance to Drawings	Internal / Vendor test report	P	-	-	
		Free from dents, burrs & no missing operation	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor test report	P	-	-	
1.3.0	Painting	Paint shade and Surface finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal / Vendor test report	P	-	-	
2.0.0	Electronic Components	Specification Details: Make, Type No.& Packing	Visual	100%	Component data sheet/ P.O./ Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	-	-	Inspection report for all the components shall be provided for review.
2.0.1		Functional test (If needed)	Electrical	Sampling plan							
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Finished Product Test Certificate	P	W	W	10% or one random sample shall be offered for functional check during inspection
3.0.1		Dimensions	Measurement	100%							
3.0.2		Functional test on table	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure					
4.0.0	Degree of Protection	IP65	Type test	Prototype	IS / IEC 60529	IS / IEC 60529	Type test report	P	V	V	
			LEGENDS: M: Manufacturer N: Customer C: Contractor/TPIA P: Perform W: Witness V: Verification of documents		Reviewed By:	Customer Approval					
Manufacturer			Contractor								
SIGNATURE						Name & Signature of Approving Authority					

Note:

- 1 Reference Documents will be available at the time of inspection for verification.
- 2 SP - Sampling Plan as per IS: 2500
- 3 TPIA - Third Party Inspection Agency
- 4 Applicable formats to be referred during inspection.

RS

STANDARD QUALITY ASSURANCE PLAN											
 	Manufacturer's Name & Address:		Equipment: Rate of Flow Indicator				Project:				
			DOC NO: Std.QAP/23-24/I-05				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:				Contractor:				
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency M C N			Remark
1.0.0	Mechanical Components										
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal/Vendor test report	P	-	-	
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal/Vendor test report	P	-	-	
1.2.0	Machining	Free from dents & burrs, Surface finish	Visual	100%	Inspection Instructions	Conformance to instructions	Internal/Vendor test report	P	-	-	
1.3.0	Painting	Paint shade and paint finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal/Vendor test report	P	-	-	
2.0.0	Electronic Components	Specification Details: Make, Type No. & Packing	Visual	100%	Component data sheet/ P.O. / Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	-	-	Inspection report for all the components shall be provided for review.
2.0.1		Functional test (If needed)	Electrical	Sampling plan							
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Internal report	P	W	W	10% or one random sample shall be offered for functional check during inspection
3.0.1		Functional test on table	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure	Internal test report				
4.0.0	Degree of Protection	IP-67	Type test	Prototype	IS /IEC 60529	IS /IEC 60529	Type test report	P	V	V	
Manufacturer Contractor			LEGENDS:		Reviewed By:	Customer Approval					
			M: Manufacturer								
			N: Customer								
			C: Contractor/TPIA								
			P: Perform								
SIGNATURE			V: Verification of documents			Name & Signature of Approving Authority					
			W: Witness								

Note:

- 1 Reference Documents will be available at the time of inspection for verification.
- 2 SP - Sampling Plan as per IS: 2500
- 3 TPIA - Third Party Inspection Agency
- 4 Applicable formats to be referred during inspection.

16

STANDARD QUALITY ASSURANCE PLAN

	Manufacturer's Name & Address:		Equipment: Ultrasonic Open Channel Flow Transmitter				Project:				
			DOC NO: Std.QAP/23-24/I-06				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:				Contractor:				
Sr. No.	Component & operation	Characteristics	Type of check	Quantum of check	Reference Document	Acceptance Norms	Format of Record	Agency			Remark
1.0.0	Mechanical Components							M	C	N	
1.1.0	Casting	Dimensional	Measurement	A sample from each lot	Manufacturer's Drawings	Conformance to Drawings	Internal / Vendor Inspection report	P	-	-	
1.1.1		Shrinkage, Blow holes, Cold run, Cracks	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-	
1.2.0	Machining	Dimensional	Measurement	Sampling plan	Manufacturer's Drawings	Conformance to Drawings	Internal/Vendor test report	P	-	-	
1.2.1		Free from dents, burrs & no missing operation	Visual	100%	Inspection Instructions	Conformance to instructions	Internal / Vendor Inspection report	P	-	-	
1.3.0	Painting	Paint shade and Surface finish	Visual	100%	Process sheet / drawings	Conformance to Process Sheet / drawings	Internal / Vendor Inspection report	P	-	-	
2.0.0	Electronic Components	Specification Details: Make, Type No. & Packing	Visual	100%	Component data sheet / P.O. / Inspection instructions	Conformance to Data sheet / P.O. / Inspection instructions	Internal/Vendor Inspection report	P	V	V	Inspection report for all the components shall be provided for review.
		Functional test (If needed)	Electrical	Sampling plan							
3.0.0	Finished Instrument	Workmanship, Name plate entries & Aesthetics	Visual	100%	Customer Data Sheet / Drawings	Conformance to Data Sheet / Drawings	Finished Product Test Certificate	P	W	W	10% or one random sample shall be offered for functional check during inspection
3.0.1		Functional Check	Electrical	100%	Manufacturer Test Procedure	Conformance to Test Procedure					
4.0.0	Degree of Protection	IP-67	Type test	Prototype	IS 13947 (Part 1)	IS 13947 (Part 1)	Type test report	P	V	V	
			LEGENDS: M: Manufacturer N: Customer C: Contractor/TPIA P: Perform W: Witness V: Verification of documents								
Manufacturer			Contractor			Reviewed By:			Customer Approval		
SIGNATURE						Name & Signature of Approving Authority					

Note:

- 1 Reference Documents will be available at the time of inspection for verification.
- 2 SP - Sampling Plan as per IS: 2500
- 3 TPIA - Third Party Inspection Agency
- 4 Applicable formats to be referred during inspection.

[Handwritten Signature]

STANDARD QUALITY ASSURANCE PLAN													
	Manufacturer's Name & Address:				Equipment: PressureSwitch			Project:					
					DOC NO: Std.QAP/23-24/I-07			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
					REV NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)					
					DATE:			Contractor:					
Sl. No	Component/Operation	Characteristics	Class	Type of Check	Quantum of Check	Ref. Document	Acceptance Norms	Format of Record	Agency			Remarks	
									M	C	N		
1	<u>Raw Material</u> a) Sensor Housing-Casting b) Sensor - Diaphragm	Chemical Properties	Major	Verify of Chemical Conformity	Sample / Lot	Technical Specifications	Conformity to Specs.	Material TC/ Lab Report	P	V	V		
2	<u>Final Product Inspection</u> Performance and Calibration	1. Name/Tagplate	Minor	Visual	100%	Approved Drg/Data sheet	As per Approved Drg/Data sheet	Test Certificate	P	W	W	10% or one random sample of each size shall be offered for functional / calibration check during inspection.	
		2. Calibration, Range, Setpoint, Differential, MWP, Repeatability	Critical	Functional	100%								
		3. Cable entry, Instrument connection, Mounting.	Major	Dimensional	100%								
				LEGENDS:		Reviewed By:		Customer Approval					
				M: Manufacturer									
				N: Customer									
				C: Contractor/TPIA									
				P: Perform									
				W: Witness				Name & Signature of Approving Authority					
Manufacturer		Contractor											

Notes:

1. Reference Documents will be available at the time of inspection for verification.
2. SP - Sampling Plan as per IS: 2500
3. TPIA - Third Party Inspection Agency
4. Applicable formats to be referred during inspection.

16

STANDARD QUALITY ASSURANCE PLAN

		Manufacturer's Name & Address:		Equipment: SCREENED INSTRUMENTATION CABLES (ARMOURED)				Project:			
				DOC NO: Std.QAP/23-24/I-08				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:				Contractor:			
S. No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	M	C/T	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12
I.	RAW MATERIAL										
1.1	COPPER ROD for Conductor / Drain Wire	a. Dimensions b. Conductivity / Resistivity	Major Cri.	Measu. Elect.	1 sample / lot	IS-613 / IS:1244 4"	IS :8130/ IS: 613"	IMR/T C"	P P	- -	
1.2	INSULATION	a. Tensile Strength (before & after Ageing) b. % Elongation at break (before & after Ageing) c. Thermal Stability (for Insulation) d. Surface finish	Major " Major Major	Mech. " Therm. Visual	1 sample / lot " "	IS - 5831 & Appd. Data Sheet" " "	IS - 5831 & Appd. Data Sheet" " "	" " "	P P P P	- - - -	
1.3	Tapes (Aluminum, Mylar) (As applicable)	a. Thickness b. Size	Major "	Measu. Measu.	1 sample / lot	" "	" "	TC/ Register	P P	- -	
1.4	INNER SHEATH	a. % Elongation at break (before & after Ageing)	Major	Mech.	1 sample / lot	IS - 5831 & Appd. Data Sheet	IS - 5831 & Appd. Data Sheet	"	P	-	
1.5	ARMOURING (If applicable)	a. Dimension b. TS & % Elongation c. Zn Coating d. Resistivity e. Torsion/ Winding	Major " " " "	Measu. Mech. Chem. Elect. Physical	1 sample/lot " " " "	Appd data sheet IS-3975 " " "	Appd data sheet IS-3975 " " "	TC/IMR " " "	P P P P P	- - - - -	
1.6	OUTER SHEATH	a.Tensile Strength (before & after Ageing) b. % Elongation at break (before & after Ageing) c.Thermal Stability (for Insulation) d.Surface finish	Major " Major Major	Mech. " Therm. Visual	1 sample / lot " "	IS - 5831 & Appd. Data Sheet" " "	IS - 5831 & Appd. Data Sheet" " "	" " "	P P P P	- - - -	
1.7	FRLS TEST FOR OUTER SHEATH (If applicable)	a.Oxygen Index b.Temp Index c.HCL Emission (by weight) d.Smoke Density Rating	" " " "	Env. " Chem. Env.	1 sample/lot DO - DO - DO -	ASTMD-2863/95 - DO - IEC-754(I)/94 ASTMD-2843/93	" " " "	" " "	P P P P	- - - -	
1.8	DRUM	a. Constructional Checks b. Dimensions	Major "	Visual Measu.	100% 1 sample / lot	IS-10418/Plant Standard	IS-10418/Plant Standard	" "	P P	- -	

S.No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	M	C/T	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12
II.	INPROCESS										
2.1	Conductor	a. No. of Strands b. Diameter c. DC resistance	Major Major Major	Visual Phy. Elect	1 Sample /Lot" "	Appd.Data sheet" "	As per Col.7" "	TC / Register" "	P P	- -	
2.2	Wire Drawing & Annealing	a. Size b. Surface Finish c. % of Elongation	Major " Major	Dimn. Visual Mech.	1 sample at start & 1 sample at end 100% 1 sample / lot	IS-8130 & Appd.Data sheet" "	As per Col.7 "	TC / Register" "	P P P	- - -	
2.3	Tinning of copper (for drain wire)	a. Size b. Percentage of Elongation	Major Major	Dimn. Mech	1 sample / lot 1 sample / lot	" "	" "	" "	P P	- -	
2.4	Bunching	a.Dimension and No. of Strand b.Resistance	Major Crit.	Measu. Elect.	1 sample / lot 1 sample from	" "	"	Register" "	P P	- -	
2.5	PVC INSULATION:	a. Surface Finish b. Core Diameter *c. Radial Thickness (Min. & Max.) d. Spark Test e. Volume Resistivity/insulation Resistance f. colour, Marking Identification g. TS & % Elongation	Major Major Major Major Major Major	Visual Measu. Elect Elect. Elect. Visual Mech.	100% 1 sample/lot 1 sample/lot 100% 1 sample/lot 100% 1 sample/lot	Surface shall be smooth & free from scratches Appd.Data sheet Appd.Data sheet IS-10810 (with 3kv ac) Appd.Data sheet " IS-5831	Same as col.7 " " " " "	TC /Register " " " " "	P P P P P P P	- - - - - - -	* No repairs are allowed on the Insulated core
2.6	Twisting	a. Lay length and direction b. Size/dimension c. Pair Colour	Major Major Major	Measu. & Visual Measu Visual	1 sample at start & 1 sample at end 1 sample /lot 100%	As per Appd.Data sheet " "	" " "	" " "	P P P	- - -	
2.7	Laying of pairs Taping/Shielding (wherever applicable)	a. construction b. Dimension c. Coverage/Overlap d. Continuity e. Diameter over laid up	Major " " " "	Visual Measu. Measu. Dimn. "	100% 1 sample /lot 1 sample /lot 1 sample /lot "	As per Appd.Data sheet " " " "	Same As per col.7 " " " "	TC / Register " " " "	P P P P P	- - - - -	

18

S.No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	M	C/T	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12
2.8	Sheathing:	* a. Surface Finish b. Colour/Marking /Embossing c. Diameter, Thickness d. TS & % Elongation	" Major Major Major	Visual Visual Measu. Mech.	100% 100% 1 Sample / lot 1 Sample / lot	Smooth free from Visual defect As per Appd.Data sheet " IS - 5831	Same As per col.7 " " "	QC Sheet " " "	P P P P	- - - -	*Porosity, Burnt Particles, Pimples (Repairs are not allowed)
2.9	ARMOURING: (If applicable)	* a. Surface Finish b. Direction of Lay & Coverage c. Size of Wire/Strip d. Diameter over armouring e. No. of wire / Strip	Major Major Major Major Major	Visual Visual Measu. Measur e. Measur e.	100% 100% 1 sample / lot 1 sample / lot"	Smooth free from visual defects like rusting etc. Appd. Data sheet" " "	" " " "	" " " "	P P P P P	- - - -	* Min. coverage shall be 90% No gap more than 1wire is allowed
III.	FINAL INSPECTION							"			
3.1	<u>Routine Test</u>	a.Conductor Resistance b.High Voltage Test on finish cable at roomtemp.	Crit. "	Elect. "	100% length "	IS-8130/appd datasheet BS EN 50288-7 /Appd data sheet	" "	FIR "	P P	V V	
3.2	<u>Type Test</u>										
i)	For Conductor (including drain wire)	a) DC Resistance Test b) Diameter c) Tin Coating Test(per sulphate test)	Crit. Major Major	Elect. Measu Chem	1 sample / lot " "	IS-8130/appd datasheet " "	" " "	" " "	P P P	V V V	
ii)	PVC Insulation	a)Test for Thickness b)TS & % Elongation test (before & after ageing) c) Hot Deformation test d) Heat Shock test e) Heat Shrinkage Test f) Cold Bend test g) Colour fastness Test h) Thermal Stability Test	Major Major Major Major Major Major Major	Measu. Measu. Phy. Phy. Phy. Phy. Phy.	1 sample / lot " " " " " 1 sample / lot "	IS-5831/appd. Datasheets " " " " " IS-5831/appd. Datasheets "	" " " " " "	" " " " " FIR "	P P P P P P P	V V V V V V V	

85

[illegible]

15

S. No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	M	C/T	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12
3.3	ACCEPTANCE TEST	a. DC Cond, resistance (Cable & drain wire)	Crit.	Elect.	1 sample of each size and type	IS-8130/appd datasheet	Same As per col.7	FIR	P	W	
		b. H V Test	Crit.	Elect.	"	As per Appd.Data sheet	"	"	P	W	
		c. I R Test	Major	Elect.	"	"	"	"	P	W	
		d.Constructional details &Dimensions									
		e. Constructional details	Major	Visual	"	"	"	"	P	W	
		f. Shield Al. Mylar thickness	Major	Measu.	"	"	"	"			
		g. Insulation thickness	Major	Measu.	"	"	"	"	P	W	
		h. Inner & Outer sheath thickness (as applicable)	Major	Measu.	"	"	"	"	P	W	
		i. Diameter over outer sheath				As per appd data sheet			P	W	
		j. Outer sheath - colour,	Major	Visual	1 sample of each	"	Same As per col.7	FIR	P	W	
		Marking/embossin g &End sealing			size and	As per appd data sheet		"	P	W	
		k. Armouring Dimensions(as applicable)	Major		type"	"	"	"	P	W	
		l. Mutual capacitance	Major	Elect	"	"	"	"	P	W	
		* m. Overall Coverage/overlapof shield & continuity of drain wire	Major	Visual	"	"	"	"	P	W	* Continuity shall be checked as per Manufacturer's practice
		n. Insulation Resistance	Major		"	IEC-60332-I	"	"	P	W	
		o. Max. L/R Ratio test	Major	Elect.	"	As per appd data sheet	"	"	P	W	
		q. Capacitance	Major	Elect.	1 sample per lot		"	FIR	P	W	# Irrespective of size & Type.
		r.** Flammability test		Che m.					P	W	
		(Overall Sheath)			irrespective of size /type						
		s. **FRLS Test for Outer Sheath for O (Oxygen Index, T (Temp. Index, SDR (Smoke Density Rating& HCL Emission	Major	Chem.	"		"	FIR	P	W	** If applicable
		LEGEND: RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION.						FOR CUST DOC No.			

MANUFACTURER / CONTRACTOR

M = MANUFACTURER, C = CUSTOMER / NOMINATED INSPECTION AGENCY T=THIRD PARTY
INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION, AS APPROPRIATE, "R" REVIEW
FIR = FINAL INSPECTION REPORT

REVIEWED BY

NAME & SIGN. OF APPROVING
AUTHORITY & SEAL

16

STANDARD QUALITY ASSURANCE PLAN										
	Manufacturer's Name & Address:		Equipment: Online Water Quality Analyzers			Project:				
			DOC NO: Std.QAP/23-24/I-9			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:			Contractor:				
S. No.	Component & Operation	Characteristics	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks
							M	C	N	
1	Verification of documents	Warranty certificate/ mfr. calibration reports/ IP test report for transmitter & sensors/ certifications	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Certificate of Conformance from/ relevant test reports	P	V	V	Manufacturer standard test report for analyzer, IP manufacturer self-declaration
2	Physical verification of lot	Checks of analyzers (make/model no/serial no/tag no/connection type) accessories check	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Internal inspection report/ witness report	P	W	W	
3	Dimensional checks	physical /measurement	one analyzer/ model/ type	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Witness report	P	W	W	
4	Power on test of analyzers	Functional and access to menu settings	10% for model/ type	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Witness report	P	W	W	
5	Calibration	Accuracy/ Calibration check	10% of sample/ each type	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Calibration report	P	W	W	As per note II
			LEGENDS:		Reviewed By:	Customer Approval				
			M: Manufacturer							
			N: Customer							
Manufacturer	Contractor	C: Contractor/TPIA		Name & Signature of Approving Authority						
		P: Perform								
		W: Witness								
SIGNATURE			V: Verification of documents							

Notes:

- I) Analyzers shall be offered for inspection with Calibration certificate/Manufacturer Standard Test reports issued during manufacturing 100% quantity.
- II) Analyzer Calibration shall be performed with buffer solution/standard.

fb

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer's Name & Address:		Equipment: UPS System				Project:			
				DOC NO: Std.QAP/23-24/I-10				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:				Contractor:			
S. No	Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks
	2	3	4	5	6	7	8	9			10
								M	C	N	
A. INWARD QC/ RAW MATERIAL & BOUGHT OUT COMPONENTS											
A.1	Panel (Cubical) Fabrication	Visual, Dimension Mechanical Chemical	Measurement	100%	As per approved drawings.	As per approved drawings.	Internal test report / Supplier TC	p	V	V	
A.2	Busbars, Current Transformers, Capacitors, Power supply Modules, Fuses, Contactors, Switches, Isolators, Batteries.	Visual Electrical	Measurement	100 %	As per approved drawing/ Specs	As per approved drawing/ Specifications	Internal test report / Supplier TCC	p	V	V	
A.3	Power Transformer & Choke	Visual Electrical	Review of Docs	100%	As per product specs.	As per Specification and GTP	Supplier TC	p	V	V	
B. SUBASSEMBLY AT IN PROCESS STAGE											
B.1	Panel (Cubical) Painting	Painting Process	Visual and Measurement	100 %	Shade mentioned in approved. Drawings/Datasheet	Shade mentioned in approved. Drawings/Datasheet	Internal check sheet	p	V	V	
B.2	Visual Checks for Mechanical Assembly										
	GA Verification	Visual	Visual	100%	As per specifications	As per specifications	Internal check sheet	p	V	V	
2	Components Verification		Visual	100%	As per SLD & wiring diagram	As per SLD & wiring diagram	Internal check sheet	p	V	V	
	Polarity		Visual	100 %	Approved Drawings/Datasheet	As per Drawings/Datasheet	Internal check sheet	p	V	V	
4	Tightness		Visual	100 %	Approved Drawing	Approved Drawing	Internal check sheet	p	V	V	
B.3	Visual Checks for Electrical Wiring										

1	Routing of wires		Visual	Random Sample	As per approved Drawings/Datasheet	As per approved Drawings/Datasheet	internal check sheet	p	V	V	
2	Ferruling		Visual	Random Sample	As per approved Drawings/Datasheet	As per approved Drawings/Datasheet	Internal check sheet	p	V	V	
3	Crimping	Visual	Visual	100%	As per approved Drawings /Datasheet	As per approved Drawings/ Datasheet	Internal check sheet	p	V	V	
4	Tightness		Visual	100%	As per approved Drawings/Datasheet	As per approved Drawings/ Datasheet	Internal check sheet	p	V	V	
5	Labelling		Measurement	100%	As per approved Drawings/Datasheet	As per approved Drawings/ Datasheet	Internal check sheet	p	V	V	
B.4	Electrical Testing										
1	Insulation Resistance	Electrical Testing	Electrical & Functional	100%	As per approved Drawings/ Datasheet	As per approved Drawings/ Datasheet	Internal test report	p	V	V	
2	Dielectric										
3	Voltage Calibration										
4	Current Calibration										
5	Protection Testing										
6	Functional Testing										
C	FINAL INSPECTION AND TESTING										
1	Interconnection cable check	Electrical Testing		10% samples from offered lot/ Rating	As per approved FAT Procedure, IEC 62040 -3- 2021	As per approved drawing/ Datasheet/IEC 62040-3- 2021.	Test Report	p	w	w	
2	Light Load test (Display parameter and operation of control switches)										
3	UPS Auxiliary device test (MIMIC alarm/Annunciation)										
4	AC Input failure Test										
5	AC Input return test										
6	Transfer test and retransfer test										
7	Load regulation/Full load test (Output voltage regulation)										
8	Total Harmonic distortion										
9	Overall Efficiency										

10	Ripple test without battery									
11	Over voltage protection test									
12	Audible noise at full load									
13	THD Measurement at Full load									
14	Input voltage variation test									
15	Synchronization test by simulation									
16	Full load test									
17	Overload capacity at 110% of rated load for 5 Min. & 150% rated load for 1 Min.									
18	Dimension & BOM check	Visual / Measurement								
19	Paint shade & Thickness check	Visual / Measurement								
20	HV & IR Test	Electrical Testing	100 %			Internal test report	p	V	V	
21	IP Certificate	Physical	Sample/ Design	Approved drawing	Approved drawing	Type test report	p	V	V	Simulated type test report shall be provided for review.
D SPECIAL TESTS										
	Heat Run Test (08 Hours)	Electrical Testing	1 Number / Rating	As per approved FAT Procedure	As per approved drawing/Datasheet	Test Certificate	p	V	V	
Note: 1. All raw material and major bought out components TC shall be submitted for review of contractor/TPIA/Client 2. In process inspection report of paint shall be reviewed during final inspection 3. IP Test certificate shall be provided for review of contractor/TPIA/Client and same shall be of within 05 years 4. Internal heat run test Temperature rise test report for 8 hours to be submitted for review.										

fb

STANDARD QUALITY ASSURANCE PLAN										
	Manufacturer's Name & Address:		Equipment: Pressure Transmitter			Project:				
			DOC NO: Std.QAP/23-24/I-12			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:			Contractor:				
S. No.	Component & Operation	Characteristics	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks
Final Inspection							M	C	N	
1	Verification of documents	Warranty certificate/ mfr. calibration reports/ IP test report for transmitter & sensors/ certifications	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Certificate of Conformance from/ relevant test reports	P	V	V	Manufacturer standard test reports, IP manufacturer self-declaration
2	Physical/Visual check	Verification of Tag No., Model No. -Serial nos, -Appearance	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Internal inspection report/ witness report	P	W	W	
3	Dimensional checks	Physical/mechanical dimensions	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Witness report	P	W	W	
4	Functional Check	Power-up check	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Witness report	P	W	W	
5	Review of Certificates	-Compliance Certificates - Manufacturer's certificate for calibration for PT	100%	Technical catalogue & approved Datasheets	Technical catalogue & approved Datasheets	Calibration report	P	W	W	
		LEGENDS:			Reviewed By:	Customer Approval				
		M: Manufacturer								
		N: Customer								
Manufacturer	Contractor	C: Contractor/TPIA				Name & Signature of Approving Authority				
		P: Perform								
		W: Witness								
SIGNATURE		V: Verification of documents								

Notes:

- 1) Pressure transmitters shall be offered for inspection with Calibration certificate/Manufacturer Standard Test reports issued during manufacturing 100% quantity.

18.

	Manufacturer's Name & Address:		Equipment: PLC & SCADA System	Project: Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT Consultant: SHAH TECHNICAL CONSULTANT Contractor:
			DOC NO: Std.QAP/23-24/I-11	
			REV NO: 00	
			DATE:	

INTRODUCTION

GENERAL:

1. This Factory Acceptance Test is carried out in order to demonstrate the system and its components function properly, that manufacturing, assembly, configuration is done correctly, and that system performance is following the approved documents
2. Factory Acceptance Test is applicable for PLC Panel and SCADA system.
3. Manufacturer conduct FAT to demonstrate the correctness of PLC panel in line with approved documents.
4. The FAT procedure & QAP are documents for inspection of PLC Panel.
5. The FAT will be conducted based on relevant approved documents as listed below –
 - a. System architecture
 - b. PLC general arrangement diagram and wiring diagram
 - c. PLC Bill of material
 - d. IO List

PURPOSE OF DOCUMENT:

The purpose of this document is to define the test procedure required to demonstrate PLC system, supplied to the PMC.

Factory Acceptance Test is carried out to demonstrate that the:

- PLC and its components function properly
- PLC Panel manufacturing, assembly is done correctly
- PLC system follows the relevant documents.

Regarding verification of application functions, software is developed based on Control Philosophy to verify the function easily.

Upon successfully completion of this FAT, the system will be delivered to site for installation.



DOCUMENT DESCRIPTION:

Following documents that are related to this system test specifications will be available for reference.

Standard Documents-

PLC system Specifications (Soft copy)

Project Specific documents of PLC panel drawing which consist of

- System architecture
- PLC general arrangement diagram and wiring diagram
- PLC Bill of material
- IO Overview (IO List)

FAT SCHEDULE

The Engineer (Test conductor) is responsible for the overall execution of the FAT.

1	Date of FAT	
2	Place	
3	Test Co-Ordinator	
4	Schedule of FAT	
5	Test Witnessed by	

TEST PROCEDURE:

Test Configuration:

To test configuration as shown in PLC configuration diagram

Method of Demonstration:

The system will be powered from 230 V AC power supply. First, individual components of the system will be checked.

List of the items to be tested:

Following items will undergo tests during FAT

- Processor
- PLC IO module
- PLC Power supply

1. PHYSICAL INSPECTIONS FOR PLC PANEL

1.1 General Arrangement

OUTLINE	Panel manufactured for this project is subjected to client's visual inspection to confirm that all components and accessories are in accordance to final approved panel drawing.
OBJECTIVE	The purpose of this test is to verify that the following are in accordance with approved panel drawings: 1. Visual inspection to confirm that all material is as per panel drawings. 2. Confirm that all components and accessories are mounted as per panel drawings.
REFERENCE	Approved panel drawings
PROCEDURE	1. Visually check that panel based on above objectives and verify that panel is in order. 2. Visual check shall include Dimension Check, BOM verification, Labels, tagging, installation. 3. All components are free from scratches and any kind of deformities. 4. Record make and sr.no. of important components such as CPU, IO cards etc.
CRITERIA FOR COMPLIANCE	1. Panel should confirm to that defined in panel drawings.

Test passed – Yes / No

COMMENTS

(If any)

1.2 PLC HARDWARE CHECK

OUTLINE	All hardware components are subject to client's visual inspection to verify that PLC hardware used is in accordance to approved panel drawing.
OBJECTIVE	The purpose of this test is to verify test certificates for following items. 1. For Input/output modules 2. For PLC Processor System 3. For PLC Power Supply module
REFERENCE	Approved panel drawings
PROCEDURE	1. Check that test certificates are available for above items and examine test certificates. 2. Visually check that each IO module & CPU module are installed in correct slot and check the module catalogue number. 3. Record the Sr. No. of IO cards, CPU etc.
CRITERIA FOR COMPLIANCE	The quantity and location of IO module & CPU module are in accordance with the system configuration.

Test passed – Yes / No

COMMENTS

(If any

1.3 PANEL WIRING

OUTLINE	Panel wiring for this project is subjected to client's visual and functional inspection to confirm that wiring done is in accordance with terminal assignment of PLC modules as well as PLC panel.
OBJECTIVE	The purpose of this test is to verify that the Inputs and outputs are wired as per drawing
REFERENCE	PLC Panel drawings
PROCEDURE	Visually/functionally check that each panel wiring based on above objectives and verify that each panel wiring is in order. 1. Check color code/ sizes of all wires as per approved drawings. 2. Compare the rated capacity of each protection device fitted in the panel and the rating indicated in the panel internal wiring diagram.
CRITERIA FOR COMPLIANCE	1. Wiring should be in accordance with the Terminal assigned in PLC panel drawing. 2. Exact match with the rating indicated in the panel internal wiring diagram.

Test passed – Yes / No

COMMENTS

(If any)

1.4 POWER SUPPLY CHECK

OUTLINE	All hardware components are subject to client's visual inspection to verify that PLC hardware used is in accordance to final approved panel drawing.
OBJECTIVE	The purpose of this test is to ensure that the control panel is powered in normal condition and the control panel delivers interrogation voltage in conformity with design.
REFERENCE	PLC Panel drawings
PROCEDURE	1. Measure the Voltage of incomer power supply 2. Measure the voltage of power supplies generated by the various Power supply's inside Panel. 3. Measure the O/P voltage for any channel of Digital Output card 4. Measure the interrogation voltage for any channel of Digital input card
CRITERIA FOR COMPLIANCE	1. Incomer voltage is matching the value indicated in internal wiring diagram with tolerance of +/- 10%. 2. The measure of voltage generated in panel is within the tolerance specified in the datasheet of the component generating voltage.

Test passed – Yes / No

COMMENTS

(If any)

1.5 DIGITAL LOOP CHECK

OUTLINE	All Digital modules (DI/DO) are wired up as per the module wiring diagram
OBJECTIVE	The purpose of this test is verifying that the module wiring and PLC IO configuration as per the wiring diagram.
REFERENCE	PLC Panel drawings
PROCEDURE	Visually/functionally checking of each panel wiring based on above objectives and verify that each panel wiring is in order 1. Check Digital Input by Short linking the terminals. 2. Check Digital Output by Continuity Test.
CRITERIA FOR COMPLIANCE	The module wiring should be as module wiring diagram shown in PLC panel drawing.

Test passed – Yes / No

COMMENTS

(If any)

1.6 ANALOG LOOP CHECK

OUTLINE	Analog module is wired up as per the module wiring diagram
OBJECTIVE	The purpose of this test is verifying that the module wiring and PLC IO configuration as per the wiring diagram.
REFERENCE	PLC Panel drawings
PROCEDURE	As per Wiring diagram shown in drawing 1. Check Analog input by Continuity Test. 2. Check Analog Output by Continuity Test.
CRITERIA FOR COMPLIANCE	The module wiring should be as module wiring diagram shown in PLC panel drawing.

Test passed – Yes / No

COMMENTS

(If any)

1.7 REDUNDANCY CHECK

OUTLINE	PLCs are wired up as per wiring diagram
OBJECTIVE	The purpose of this test is verifying that Redundancy of PLC CPU.
REFERENCE	PLC Panel drawings
PROCEDURE	1. Power on both the PLC CPU and check status. 2. Cut-off any One PLC supply or communication cable. 3. Do the same procedure for second PLC CPU.
CRITERIA FOR COMPLIANCE	1. After cut-off of one PLC, another PLC become Master and take charge.

Test passed – Yes / No

COMMENTS
(If any)

1.8 APPLICATION INSPECTION FOR LOGIC AND SCADA FUNCTION

OUTLINE	The Ladder Logic and Screens is generated by this project is based on Control Philosophy approved by the customer. FAT shall perform for each type of equipment.
OBJECTIVE	The purpose of this test is verifying that the Ladder logic is as per the approved Control Philosophy
REFERENCE	Control Philosophy
PROCEDURE	1. All IO cards shall be normal (without any wire break or any other fault monitoring at a time) 2. To simulate inputs and confirm the corresponding outputs. 3. To verify the logic as per Control Philosophy.
CRITERIA FOR COMPLIANCE	1. The Ladder logic & screen generated should function as per the Control Philosophy.

Test passed – Yes / No

COMMENTS
(If any)

1.9

SECURITY IN SCADA

OUTLINE	The Graphics of SCADA developed as per the requirement of process for alarms, soft keys, and status monitoring of the signal.
OBJECTIVE	The purpose of this test is verifying that only authorized user may be allowed to simulate any analog/digital input/outputs.
REFERENCE	None
PROCEDURE	4. Feed the set points/simulation value with authorized login, the value will be sent to PLC. 5. Feed the set points/simulation value with un-authorized login, the value will not be sent to PLC.
CRITERIA FOR COMPLIANCE	2. The SCADA should allow only authorized user to feed the set point. Other user only views the value.

Test passed – Yes / No

COMMENTS
(If any)

1.10

ALARMS IN SCADA

OUTLINE	The Graphics of SCADA developed as per the requirement of process for alarms, soft keys, and status monitoring of the signal.
OBJECTIVE	The purpose of this test is to verify that alarms are created in case of failed / alarm condition.
REFERENCE	None
PROCEDURE	1. Simulate the few samples of alarm tags from PLC. 2. Check the alarm status in SCADA.
CRITERIA FOR COMPLIANCE	1. Alarms & operator tags are generated in the SCADA.

Test passed – Yes / No

COMMENTS
(If any)

PB