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**Government of India
Ministry of Railways**

Signal Directorate

Schedule of Technical Requirement (STR)

For

FOG PASS

SIQ 0366 (Ver. 0)

**Research Designs and Standards
Organisation**

Manak Nagar, Lucknow – 226011

1ST Nov 2010

DOCUMENT DATA SHEET			
Designation FOG Pilot Assistance System for Safety (FOG PASS)			Amendment
Title of Document FOG PASS			
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Approved by Name: Shri Mahesh Mangal Designation: Sr. Executive Director/ Signal, RDSO			
Abstract This document defines FOG PASS			

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DOCUMENT CONTROL SHEET

NAME	ORGANIZATION	FUNCTION	LEVEL
Abhijeet Chatterjee	RDSO	Member	Prepare
Alok Katiyar	RDSO	Member	Prepare
Mahesh Mangal	RDSO		Approve

ESSENTIAL MACHINERY AND PLANTS REQUIRED FOR PRODUCTION OF FOG PASS

- | S. No. | Requirement |
|--------|--|
| 1. | Infrared reflow soldering oven for top end surface mounted technology(SMT) components and double wave soldering for bottom end SMD's |
| 2. | Burn-in Chamber / Dry Heat test Chamber to test Reliability and harvest infancy failures. |
| 3. | Computer Aided Design System with Workstations for R&D which will be, needed for failure investigation and future up-gradation. |
| 4. | Microcomputer Based Development Workstations for Hardware & Software which will be, needed for failure investigation and future up-gradation. |
| 5. | In-circuit Debugger for debugging of firmware and for programming of the units and for firmware failure analysis. |
| 6. | ROM / IC Programmer & UV Eraser (Programmer & Eraser as required for embedded software). |
| 7. | All Soldering / De-soldering stations should be Temperature Controlled and static free to ensure good Manufacturing Practices for Electronic Assembly and assuring reliable soldering within the tolerance limits of most semiconductor devices. |
| 8. | Static-charge free soldering area with static free flooring, tables and storage systems for electronic components to prevent damage to components, sub assemblies due to static-charge. |
| 9. | Static-charge free storage systems for electronic Sub-assemblies. (Prior to fitment / processing) to prevent damage due to static-charge. |
| 10. | Instruments to measure Static charges including wrist wrap tester, Static charge tester. |
| 11. | Dust/static free environment for assembly of electronic modules for good quality soldering. |
| 12. | Component Forming Machines for radial and Axial components and IC's for correct handling of components and prevent mechanical stress on components and failure thereof |
| 13. | Automatic optical Inspection unit or Visual Inspection System (with CCD Camera) for correct handling of components and prevent mechanical stress on components and failure thereof. |

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14. Automatic De-soldering Station for reworking of PCB's For reliable reworking of Faulty PCB's.
15. Test bench for testing GPS unit
16. PCB populating machine (To be indicated in QAP, if outsourced).

Note: Firm can outsource PCB populating activity to its sub vendor with prior approval of RDSO. However in such case firm shall have MOU with its sub vendor and both name and address of firm and its sub vendor shall be printed on PCB to ensure traceability.

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ESSENTIAL TESTING EQUIPMENTS REQUIRED FOR QUALITY ASSURANCE

S.No.	Requirement.
1.	Pentium IV or equivalent Computerized test set up with relevant software
2.	Storage Digital Oscilloscope of 20 MHz or above bandwidth.
3.	True R.M.S Digital Multi - meters – 4 ½ digits display with facility of diode & transistor testing.
4.	500 Megaohm Meter (500V).
5.	High Voltage Tester (dielectric Tester) of minimum 1KV RMS rating.
6.	LCR Meter for testing the rating of components.
7.	IC Tester
8.	Variac (0 to 260V, of adequate power handling capacity).
9.	Vernier Calipers
10.	Screw Gauge
11.	Steel Scale
12.	Stop Watch Timer of adequate rating/ resolution.
13.	Specialized test stations for testing electronic sub-assemblies/PCB.
14.	Variable regulated AC/DC supply up to 200 Volts for testing the unit.
15.	Complete test bench for measuring the different parameters as mentioned in RDSO specification