

Government of India
Ministry of Railways

Telecom Directorate

Schedule of Technical Requirement (STR)

For

LED Based Display Systems

Research Designs and Standards Organisation
Manak Nagar, Lucknow – 226011

DOCUMENT CONTROL SHEET

NAME	ORGANIZATION	FUNCTION	LEVEL
Director/ Telecom-II	RDSO	Member	Prepare
Executive Director/ Telecom	RDSO	-	Approve

REVISIONS

Version	Chapter/ Annexure	Revision	Effective Month/Year
STR for LED Based Display Systems	-	FIRST ISSUE	October 2006
	All pages	Revision 1.0	August 2009

I. SCOPE:

The Schedule of Technical Requirement (STR) covers machinery & plants, testing & measuring equipments and quality assurance plan required for manufacturing of following items as per RDSO specification.

S.N.	Description of Item	Specification No.
1.	Integrated Passenger Information System consisting of Train Indication, Coach Guidance and PC based Announcement System	RDSO/SPN/TC/61/2007 Revision 2.0 or latest
2.	Digital Clock with GPS Synchronisation	RDSO/SPN/TC/62/2008 Revision 3.0 or latest
3.	True Colour Video-cum-Train Information Display System	RDSO/SPN/TC/67/2008 Revision 1.0 or latest

Vendor shall also comply norms issued by RDSO time to time in this connection and other relevant laws of the country.

This STR shall be applicable to all vendors applying for registration.

Sr. No.	Requirement of Essential Testing Equipments		Details of Testing & Measuring Equipments available with the Vendor							Calibration Details	
	Description	Qty. Required	Qty. Available	Model	Make	Machine No.	Year of Built	Range/capacity	Proof of Ownership	Date of Calibration	Due Date of Calibration
	ESD effect)										
20.	Dark Enclosure for measurement of illumination, chromaticity & dispersion angle of LED's.	1 No.									
21.	Computerised Test Setup with relevant software (for testing sub assembles modules of display system)	1 No.									
22.	Test Jigs and Fixtures (for testing sub assembles)	1 No.									
23.	Test setup for verification of communication parameters/ protocol between different equipments.	1 No.									

Note:-

1. Plant & machinery and testing & measuring equipments shall be of adequate capacity & range to manufacture & test the product as per RDSO specification & drawings.
2. Outsourcing of processes mentioned at Sr. No.7, 8 & 9 of Clause II shall be from ISO 9001 certified firm.
3. Recommended technical requirements of Chromameter/ Spectrometer suitable for measurement of LED's used in Display Systems are mentioned in Clause IV.
4. Checks and tests shown in Quality Assurance Flow Chart (Clause V) are only indicative. All necessary checks & tests as necessary to ensure quality shall be carried out at every stage of manufacturing and proper record of all checks & tests shall be maintained.

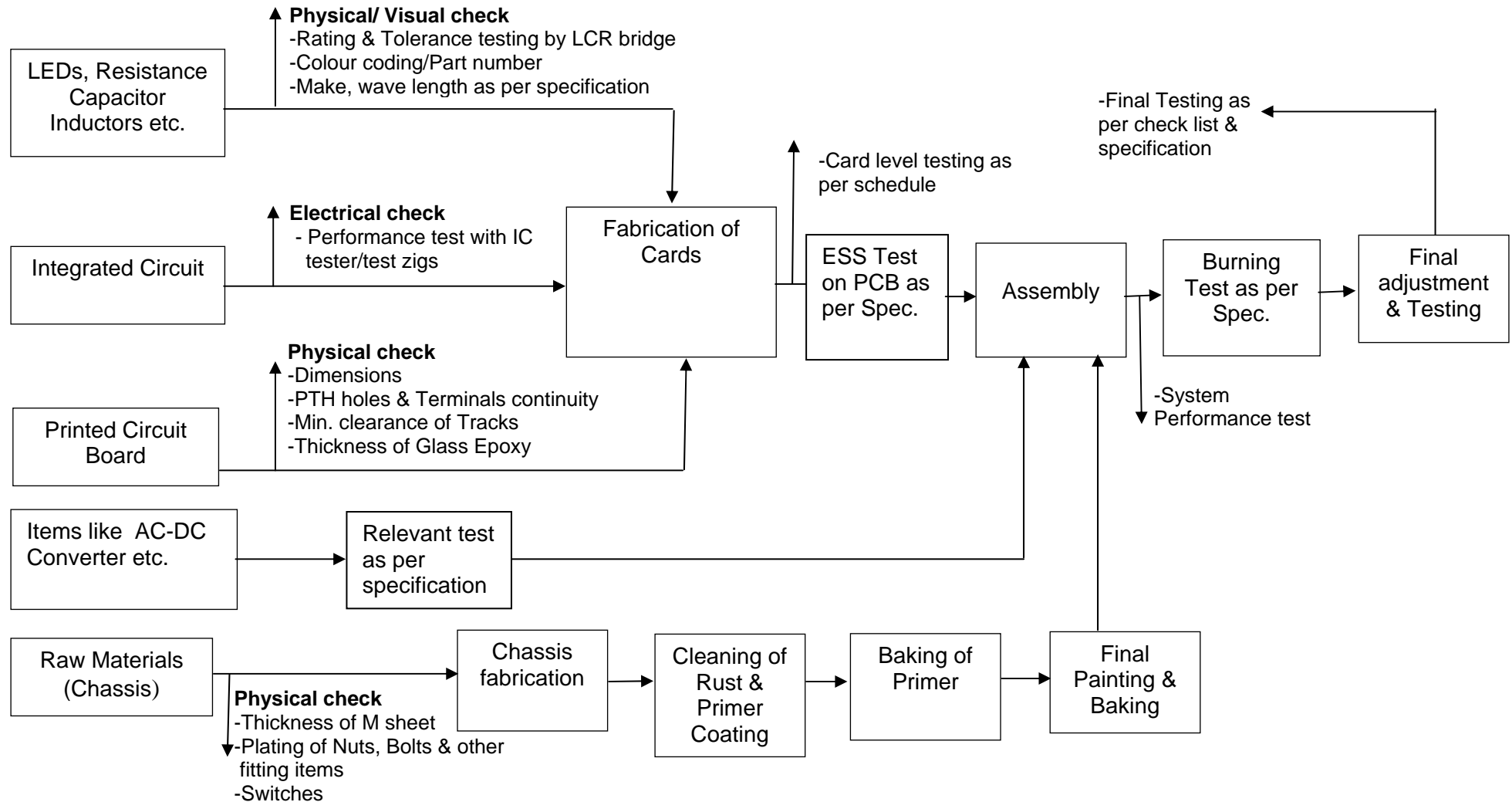
IV. Recommended technical requirements of Chromameter/ Spectrometer suitable for measurement of LED parameters used in Display Systems:

1. Chromameter/Spectrometer should be capable of following measurements of LED:
 - (a). Luminous intensity / Illuminance.
 - (b). Colour co-ordinates/Wave length.

2. Minimum measurement ranges and measurement accuracy of Chromameter/Spectrometer should be as given below:
 - (a). Luminous intensity: 0.4mcd to 4cd./ Illuminance: 0.1 to 44 LUX.
 - (b). Measurement accuracy for Luminous intensity/ Illuminance : +/- 7 % or better.
 - (c). Wave length: 450 nm to 650 nm. (Wave length can be calculated from color co-ordinates.)
 - (d). Measurement accuracy for wave length: +/- 0.5 nm or better.
 - (e). Measurement accuracy for chromaticity (x, y): +/- 0.005 or better.

3. Equipment and accessories should be duly calibrated and calibration certificate with proper traceability to a national calibration laboratory like PTB (German Calibration Service) or NIST (US National Institute of Standards & Technology) or JCSS (Japan Calibration Service System) shall be submitted along with the equipment.

V. Quality Assurance Flow Chart for LED Based Display Systems:



UNDERTAKING OF THE FIRM

“I hereby give an undertaking that at any time after approval is accorded, some machinery is found deficient without intimation to RDSO, and then it will be presumed that machinery was not there since beginning and firm will be withdrawn immediately.”

Date:

Signature

Name in capitals & Designation

Place:

Stamp of the firm

Note:

1. Details of Machinery & Plants and Testing & Measuring Equipments should be furnished by the vendor in complete as per format of STR. Vendor should also furnish the details of the ownership.
2. It should be mandatory to inform the RDSO through Fax (followed by confirmation copy through courier /speed post) as soon as any machinery is removed from the firm's premises (even for repair etc.) RDSO should be informed again, when is brought back and made operational.
