	RAIL COACH FACTORY KAPURTHALA INDIAN RAILWAY	Document no.	EDW 0032
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WORK INSTRUCTION FOR TEMPERATURE RISE TESTING OF LIGHT FITTINGS			

1. Purpose

The purpose of this work instruction is to issue the guidelines for testing various type of light fitting to be provided in AC and Non AC coaches of safety audit rake before installation. The types of coaches are L2T, L3T, LFAC, LGS, LSCN, LPCAR, LSLR. The safety audit rake shall comprise of 22 coaches and 2 such rakes shall be manufacture based on the observations and guidelines issued by auditing agency i.e. M/s RITES.

2. Scope

These instructions are applicable to all types of coaches in safety audit rake

3. Procedure

The number of light fittings provided in AC and Non AC coaches and load chart is as under:

Load Calculation LHB Non-AC Day Coach (LGS)				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	COMPARTMENT AREA(B-1)	9	20	180
2	DOORWAYAREA(B-1)	9	6	54
3	LAVATORY(D)	9	4	36
4	TOILETFLUSH VALVE	20	4	80
5	PACIL	3	2	6
6	AEL	10	4	40

Load Calculation LHB Non-AC Sleeper Coach (LSCN)				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	COMPARTMENT AREA(B-1)	9	20	180
2	DOORWAYAREA(B-1)	9	4	36
3	LAVATORY(D)	9	4	36
4	NIGHTLIGHT(E)	1	9	9
5	TOILETFLUSH VALVE	20	4	80
6	PACIL	3	2	6
7	AEL	10	4	40

SSE/CAD	SEE/VD	Dy.CEE/D/3-Ph

Load Calculation LHB Non-AC LSLRD Coach (31Seater)				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	COMPARTMENT AREA(B-1)	9	13	117
2	DOORWAYAREA(B-1)	9	6	54
3	LAVATORY(D)	9	4	36
4	TOILETFLUSH VALVE	20	4	80
5	PACIL	3	2	6
6	SIDELIGHT	5	2	10
7	AEL	10	4	40

Load Calculation of LHB AC3-TIER				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	Lightings18W	18	9	162
2	Lightings9W	9	7	63
3	Lightings9W+1W	10	9	90
4	Toilet occupied indicator	2	4	8
5	PACIL	2	2	4

Load Calculation of LHB AC2-TIER				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	Lightings18W	18	9	162
2	Lightings9W	9	7	63
3	Lightings9W+1W	10	9	90
4	Reading light	2	52	104
5	Toilet occupied indicator	2	4	8
6	PACIL	2	2	4

SSE/CAD	SEE/VD	Dy.CEE/D/3-Ph

Load Calculation of LHB FAC				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	Lightings18W+5W	23	8	184
2	Lightings18W	18	8	144
3	Lightings9W	9	7	63
4	Lightings9W+1W	10	9	90
5	Reading light	2	24	48
6	Toilet occupied indicator	2	4	8
7	PACIL	2	2	4

Load Calculation of LHB POWER CAR				
	Coach lighting	WATT	QPC	TOTAL LOAD IN WATTS
1	Lightings18W	20	20	400
2	PACIL	2	2	4

A) The total no. of light fittings in the safety audit rake is as per the above table and light fittings @10% of each type of light fittings shall be tested for maximum temperature rise of the PCB and its components in open condition of the ballast. The light fittings shall be connected to the lowest operating voltage on a test bench and the connections scheme shall be simulated w.r.t the actual coach wiring scheme. Temperature rise readings shall be recorded in 15 minutes interval till saturation of the temperature rise. Saturation state shall be considered when the last two readings are stable. The readings shall be taken with the help of thermal scanner camera with auto logging feature.

After the test all the temperature recorded shall be plotted in a graph and the threshold value shall be obtained which will commensurate with 90% population of light fittings tested. The light fittings wherein the temp is recorded above the threshold value so obtained shall be examined and RCA shall be done.

SSE/CAD	SEE/VD	Dy.CEE/D/3-Ph

B) All light fittings provided in the coach after complete furnishing shall be tested for signs of temperature rise. For this the light fittings shall be in 'ON' condition in the coach and temperature rise readings shall be taken with thermal scanner in equal intervals of 15 minutes and for a minimum duration of two hours and any abnormal rise in temperature shall be recorded and action taken as follows:

1. The light fittings of on which higher temperature rise (>15 deg C above ambient) is found are not to be provided in safety audit rake.
2. The lot of same make light fittings shall be subjected to additional tests i.e. HV and IR test and current drawn shall be recorded and compared with the prototype test results for investigation purpose.

4. Governance standard/Specification

i) RDSO_PE_SPEC_TL_0091_2016_rev_1_RCF annex_1, 2 &3