DIN EN 14750-2:2006-08 (E)

Railway applications - Air conditioning for urban and suburban rolling stock - Part 2: Type tests

Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Terms and definitions 6

4 Test classification 6

5 Preliminary verifications 7

6 Comfort tests 7
6.1 Air movement 7
6.1.1 General remarks 7
6.1.2 Air flow rates 7
6.1.3 Pressure differentials (visualisation) 7
6.2 Critical air speed 7
6.3 Measurement of air speeds 7

7 Climatic tests 8
7.1 General remarks 8
7.2 Preheating test 8
7.2.1 Test level TL1 8
7.2.2 Test level TL2 8
7.3 Pre-cooling test 8
7.3.1 Test level TL1 8
7.3.2 Test level TL2 8
7.4 Regulation tests 9
7.5 Tests with door open/closed 9

8 Tests at extreme exterior operating conditions 9

9 Complementary tests 9
9.1 Determination of the coefficient k 9
9.1.1 Purpose of the test 9
9.1.2 Definition 9
9.1.3 Procedure 10
9.2 Thermography 10
9.3 Noise emission 10
9.4 Vibration generation 10

10 Methods of measurement - Measuring instruments 10
10.1 General remarks 10
10.2 Temperatures 11
10.2.1 Air temperature 11
10.2.2 Surface temperatures 11
10.3 Relative humidity 11
10.4 Air speed 11

10.5 Airflow rate 11
10.6 Simulated speed of the vehicle 11
10.7 Equivalent solar load 11
10.8 Energy consumption and power rating 11

11 Characteristics of the test equipment 11
11.1 General remarks 11
11.2 Occupation 12
11.3 Equivalent solar load 12
11.3.1 Solar load calculation 12
11.3.2 Window area 12
11.3.3 Wall area 13
11.3.4 Roof area 13

12 Distribution of measuring points 13
12.1 General 13
12.2 Distribution of sensors in the vehicle 14
12.2.1 Comfort envelope temperature measurement points 14
12.2.2 Surface temperature measurement points 14
12.2.3 Supply air outlet temperature measurement points 14
12.2.4 Comfort envelope air speed measurement points 14
12.2.5 Comfort envelope relative humidity measurement points 14
12.3 Climatic chamber sensor distribution 14

Annex A (normative) Test programme for TL1 15

Annex B (normative) Test programme for TL2 17

Annex C (normative) Equivalent solar load 22

Annex D (normative) Location of the measuring points used for the determination of the mean interior temperature (Tim), the determination of the range of extreme interior temperatures and the relative humidity in the comfort envelopes and local annexes 23

D.1 Vehicles without articulation 23
D.2 Vehicles with articulation 24

Annex E (normative) Location of the measuring points used for the determination of surface temperatures 25

Annex F (normative) Location of sensors 26