

# DIN EN 14813-2:2011-01 (E)

## Railway applications - Air conditioning for driving cabs - Part 2: Type tests (includes Amendment A1:2010)

---

| <b>Contents</b>    |  | <b>Page</b> |
|--------------------|--|-------------|
| 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 tests .....                             | 7           |
| 6.1.1              | General remarks .....                                | 7           |
| 6.1.2              | Air flow rates .....                                 | 7           |
| 6.1.3              | Pressure differentials (visualisation) .....         | 7           |
| 6.2                | Measurement of air speeds .....                      | 7           |
| 6.3                | Thermal comfort .....                                | 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                | Precooling test .....                                | 8           |
| 7.3.1              | Test level TL1 .....                                 | 8           |
| 7.3.2              | Test level TL2 .....                                 | 8           |
| 7.4                | Regulation test .....                                | 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 .....                                      | 9           |
| 9.2                | Thermography .....                                   | 10          |
| 9.3                | Noise emission .....                                 | 10          |
| 9.4                | Vibration generation .....                           | 10          |
| 10                 | Methods of measurement - Measuring instruments ..... | 10          |
| 10.1               | General remark .....                                 | 10          |
| 10.2               | Temperatures .....                                   | 10          |
| 10.2.1             | Air temperature .....                                | 10          |
| 10.2.2             | Surface temperatures .....                           | 10          |
| 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 .....                            | 11 |
| 11.3  | Equivalent solar load .....                 | 12 |
| 11.3.1  | General .....                               | 12 |
| 11.3.2  | Solar load calculation .....                | 12 |
| 11.3.3  | Front window area .....                     | 13 |
| 11.3.4  | Wall area .....                             | 13 |
| 11.3.5  | Roof area .....                             | 13 |
| 12  | Distribution of measuring points .....      | 14 |
| 12.1  | General .....                               | 14 |
| 12.2  | Measuring points in the driving cab .....   | 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 .....   |   | 23 |
| Annex D (normative) Location of the measuring points in a driving cab .....   |   | 24 |
| Annex E (normative) Location of the temperature sensors in the test chamber .....   |   | 26 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast) ..... |   | 27 |