TEST PROCEDURES

ADR 48/00 - REAR REGISTRATION PLATE

ILLUMINATING DEVICES

“A Guide for Inspectors”

This Circular is relevant to the Third Edition of the Australian Design Rules gazetted as National Standards under the Motor Vehicle Standards Act 1989
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1 SCOPE

This procedure, when read in conjunction with other Circulars issued by the Administrator, provides sufficient information, without reference to other standards, to conduct and audit tests related to rear registration plate illuminating devices as defined in Australian Design Rule No. 48/00.

This procedure provides details of minimum standards for method and equipment utilized to demonstrate compliance with the requirements of ADR 48/00. Other methods and equipment are permissible providing the Test Facility can demonstrate that such alternatives provide results of no less accuracy than those derived from this procedure.

This ADR requires validation by test in two specific areas, these being:

(i) Rear Registration Plate Illumination level.

(ii) Colour of emitted light.

This procedure is intended primarily as a guide for Officers of the Australian Department of Transport and Communications or Agents acting on behalf of the Administrator when they carry out audit inspections of Test Facilities or witness tests for compliance with the ADR. This and other Circulars dealing with Test Procedures for ADRs may also be useful to vehicle manufacturers and testing organisations.

Nothing in these Circulars, however, absolves the manufacturer from complying with the requirements as specified in the ADR which always remains the primary reference.

2 SELECTION OF TEST LAMPS

In general only production lamps are satisfactory for testing to these requirements as the optical characteristics of a plastic or glass lens are dependent on the detail dimensioning of the production moulding die. However, prototypes may be tested provided that they are fully representative of the production components.

3 IDENTIFICATION OF TEST LAMPS

All test lamps shall be representative of the design condition as reflected in the production drawings.

In most cases the test lamps will be assembled using production parts which have passed through approved quality assurance procedures. If prototype lamps are used they should be individually inspected for both dimensional and material specification compliance with their respective drawings.

For each test program all relative components are to be uniquely identified by part number, drawing number and revision or issue status. Such information is to be included in all test records and reports.

4 NUMBER OF TEST LAMPS

The number of lamps to be tested will depend on the method of manufacture. Where the lens is a plastic or glass moulding, one component from each moulding die should be tested. Where lamps are handed at least one lamp of each hand should be tested.

5 EQUIPMENT AND PROCEDURE

5.1 The test equipment and procedures required for validation of this ADR are detailed in Section 4 and 6 of Circular 0-12-5.

Determination of emitted light colour is required only to ensure that the illumination is sufficiently ‘white’ so that colour of the registration plate, as perceived, remains unchanged. Although no colour limits are specified by the ADR, it is the responsibility of the Test Facility to ensure that compliance is demonstrated. If the Test Facility is of the opinion that compliance is not clearly demonstrated, a colour of reflected light test may be conducted. A test result which demonstrates that the colour of reflected light was within the trichromatic coordinates for white light given in ADR 1/00 shall be considered acceptable. (Circular 1/00-9-1)

In addition the ADR requires that the angle of incidence of light on the surface of the registration plate shall not be greater than 82 degrees and that the illuminating device shall not obscure vision of the plate over angles specified in Annex B. These angles may be determined by drawing layout or by visual inspection with the assembly mounted on a goniometer.

5.2. Measuring procedure

Luminance measurements shall be made on a piece of clean white blotting paper with a minimum diffuse reflection factor of 70 per cent, of the same dimensions as the registration plate, placed in the position normally occupied by it and 2 mm in front of its holder.

Luminance measurements shall be made perpendicularly to the surface of the paper, at the points shown in Annex A according to the type of plate for which the device is intended, each point representing a circular area 25 mm in diameter.

5.3. Photometric characteristics

At each of the points of measurement shown in Annex A, the luminance B shall be at least equal to 2.5 cd/m².

The gradient of the luminance between the values B₁ and B₂, measured at any two points 1 and 2 selected from among those mentioned above, shall not exceed 2 x B₀/cm, B₀ being the minimum luminance measured at the various points, that is to say

$$B_2 - B_1 \leq 2 \times B_0 / \text{cm}$$

distance 1-2 in cm

6 ANALYSIS OF RESULTS

The registration plate lamp(s) as tested for the specific vehicle are deemed to satisfy the requirements of ADR 48/00 if the minimum conditions as described in the ADR are met by the test results achieved.

7 REPORTING OF RESULTS

A complete internal report giving a full description of the material tested, equipment used, results and order of accuracy is to be prepared. For submission to the Administrator the report number(s) for the above test(s) is to be entered in the appropriate section of the Summary of Evidence Report.
8 SUMMARY OF EVIDENCE REPORT

The Summary of Evidence Report SE 48/00 is the only document to be sent to the Administrator for demonstration of compliance to ADR 48/00. The original test report identification number, the location of the test report, the test facility identification number and the determined results are to be recorded in the appropriate place in the SE 48/00 form for each relevant clause of the ADR.

9 PROCEDURE FOR DESIGNS WITH CERTIFICATION TO ALTERNATIVE STANDARDS

Where a copy of an official communication from the Administrative Department (of the approving government) giving no less information than that specified in Annex 1 to United Nations ECE Regulation No. 4/00, together with appropriate attachments is held by a manufacturer, the requirements of ADR 48/00 are deemed to be satisfied. In this case the relevant part of SE 48/00 shall be completed.

10 REFERENCES

ADR References
ADR Definitions
ADR 48/00 - Rear Registration Plate Illuminating Device For Other Than L-Group Vehicles
Circulars
Circular 0-12-2 - General Requirements for Test Facilities
Circular 0-12-3 - General Requirements for Calibration of Test Equipment and Instrumentation
Circular 0-12-5 - General Photometric Test Requirements
Circular 0-4-18 - Compliance with Design Rules on Lighting
Other Standards
ECE R 4/00- Rear Registration Plates
ANNEX A
MEASUREMENT POINTS FOR TEST PURPOSES

The content of Annex A is to be hatched out and in its place the luminance shall be measured at each of the points shown below:
ANNEX B
MINIMUM FIELD OF VISIBILITY OF THE SURFACE TO BE ILLUMINATED

1. The field-of-visibility angles shown above relate only to the relative positions of the illuminating device and the space for the registration plate.

2. The angle shown take account of the partial occultation caused by the illuminating device. They must be adhered to in the direction in which there is most occultation. The illuminating devices must be such as to reduce the areas partly occulted to the minimum strictly necessary.