Commission Implementing Decision of 13 March 2013 on the approval of the use of light emitting diodes in certain lighting functions of an M1 vehicle as an innovative technology for reducing CO2 emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council (Text with EEA relevance) (2013/128/EU)

COMMISSION IMPLEMENTING DECISION

of 13 March 2013

on the approval of the use of light emitting diodes in certain lighting functions of an M1 vehicle as an innovative technology for reducing CO_2 emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council

(Text with EEA relevance)

(2013/128/EU)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles[(1)], and in particular Article 12(4) thereof,

Whereas:

(1) The manufacturer AUDI AG (the 'Applicant') submitted an application for the approval of an innovative technology on 29 August 2012. The completeness of the application was assessed in accordance with Article 4 of Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO_2 emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council[(2)]. The Commission identified certain relevant information as missing in the original application and requested the Applicant to complete it. The Applicant provided the required information on 25 October 2012. The application was found to be complete and the period for the Commission's assessment of the application started on the day following the date of official receipt of the complete information, i.e. 26 October 2012.

(2) The application has been assessed in accordance with Article 12 of Regulation (EC) No 443/2009, Implementing Regulation (EU) No 725/2011 and the Technical Guidelines for the preparation of applications for the approval of innovative technologies pursuant to Regulation (EC) No 443/2009[(3)].

(3) The application refers to the use of light emitting diodes (LEDs) in the low beam headlamp, the high beam headlamp, and the licence plate lamp of an M1 vehicle.

(4) The Commission finds that the information provided in the application demonstrates that the conditions and criteria referred to in Article 12 of Regulation (EC) No 443/2009 and in Articles 2 and 4 of Implementing Regulation (EU) No 725/2011 have been met.

(5) The Applicant has demonstrated that the use of LEDs in the low beam headlamp, the high beam headlamp, and the licence plate lamp did not exceed 3 % of the new passenger cars registered in the reference year 2009. In support of this the Applicant provided data on the percentage of installed LEDs in different lighting functions in the AUDI A6 model, in M1 vehicles produced by Volkswagen AG and production data from the European Association of Automotive suppliers (CLEPA). On that basis, the Commission finds that the use of LEDs in the low beam headlamp, the high beam headlamp, and the licence plate lamp should be considered eligible for approval as an innovative technology within the meaning of Article 12 of Regulation (EC) No 443/2009.

(6) The definition of the baseline technology is essential for the determination of the CO_2 savings from the innovative technology. That definition should therefore be justified and be based on relevant data. The Applicant has provided data in support of halogen lighting as the technology with the highest market penetration in 2009. The Commission notes that although other, more energy efficient, lighting technologies may have been in use within a limited segment of the car fleet, it is acknowledged that halogen lighting had the highest market penetration for the fleet as a whole. As a consequence, and for the purpose of ensuring that the testing methodology may be relevant and representative for the vehicle fleet as a whole, it is appropriate to consider halogen lighting as baseline technology.

(7) The Applicant has provided a methodology for testing the CO_2 reductions from the use of the LEDs in the lighting functions concerned. The Commission finds that the methodology provides accurate and reliable results that are reproducible by a third party.

(8) The Commission finds that the Applicant has demonstrated satisfactorily that, for the vehicles on which the innovative technology was tested using the described methodology, the emission reduction achieved by the innovative technology is at least 1 g CO_2/km.

(9) Since the activation of the lighting in the low beam headlamp, the high beam headlamp, and the licence plate lamp is not required for the CO_2 emissions type approval test referred to in Regulation (EC) No 715/2007 of the European Parliament and of the Council[(4)] and Commission Regulation (EC) No 692/2008[(5)], the Commission is satisfied that the lighting functions in question are not covered by the standard test cycle.

(10) The activation of the lighting functions concerned is mandatory to ensure the safe operation of the vehicle and as a consequence not dependant on the choice of the driver. On that basis the Commission finds that the manufacturer should be considered accountable for the CO_2 emission reduction due to the use of the LEDs.

(11) The verification report has been prepared by an independent and certified body and it supports the findings and tests performed.

(12) Against that background, the Commission finds that no objections should be raised as regards the approval of the innovative technology in question.

(13) Any manufacturer wishing to benefit from a reduction of its average specific CO_2 emissions for the purpose of meeting its specific emissions target by means of the CO_2 savings from the use of LEDs in the lighting functions concerned, should in accordance with Article 11(1) of Implementing Regulation (EU) No 725/2011, refer to this Decision in its application for an EC type-approval certificate for the vehicles concerned,

HAS ADOPTED THIS DECISION:

Article 1

1 The use of light emitting diodes (LEDs) in the low beam headlamp, the high beam headlamp, and the licence plate lamp is approved as an innovative technology within the meaning of Article 12 of Regulation (EC) No 443/2009.

2 The CO_2 reduction from the use of LEDs in the lighting functions referred to in paragraph 1 shall be determined using the methodology set out in the Annex. The CO_2 reduction shall be determined as the total reduction of the combination of the use of LEDs in the three lighting functions specified.

Article 2

This Decision shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

Done at Brussels, 13 March 2013.

For the Commission

The President

José Manuel BARROSO

ANNEX

Methodology for determining the reduction in CO_2 emissions due to the use of LED lights in the low beam headlamps, the high beam headlamps, and the licence plate lamps

1. INTRODUCTION

In order to determine the CO_2 reductions that can be attributed to the use of LEDs in the low beam headlamps, the high beam headlamps, and the licence plate lamps fitted to M1 vehicles the following are to be established:

(a) the electric power consumption of the LED lights used in the lighting functions in question;

(b) the savings in electric power consumption compared to the base line technology, i.e. halogen lights;

(c) the reduction in CO_2 emissions due to the savings in the electric power consumption.

2. DETERMINATION OF THE ELECTRIC POWER CONSUMPTION OF THE LEDS

The electric power consumption of the LEDs for each of the lighting functions concerned is to be determined as the multiplication of the battery voltage and the electric current of each lighting unit with the number of lights of each lighting unit, according to the formula:

$$PLED = U \times I \times n$$

;

PLED : electric power consumption of an LED lighting function (W);
U : battery voltage (V) This value can be measured with a multimeter;
I : electric current (A). This value can be measured with a multimeter;
n : number of lights in function.

The measurement of the power consumption of the LEDs may be done separate from the NEDC hot test (see point 4 of this Annex).

3. DETERMINATION OF THE SAVINGS IN ELECTRIC POWER CONSUMPTION DUE TO THE USE OF LEDS

The savings in electric power consumption due to the LEDs are to be determined by comparing the electric power consumption of the baseline technology with that of the LEDs for each of the relevant lighting functions.

The total savings resulting from the comparison are to be multiplied by a usage factor representing the time during which the LEDs are fully activated.

The values specified in the table are to be applied for the electric power consumption of the base line technology and for the usage factors.

Lighting Function	Total electric power consumption of the base line technology (halogen lights) (W)[a]	Usage factor (%)[b]

a Electric energy consumption as determined in the Technical Guidelines for the preparation of applications for the approval of innovative technologies pursuant to Regulation (EC) No 443/2009, 'the Technical Guidelines'.

b The usage factors as determined in the Technical Guidelines.

Low beam lamp	137	33
High beam lamp	150	3
Licence plate lamp	12	36

a Electric energy consumption as determined in the Technical Guidelines for the preparation of applications for the approval of innovative technologies pursuant to Regulation (EC) No 443/2009, 'the Technical Guidelines'.

b The usage factors as determined in the Technical Guidelines.

4. DETERMINATION OF THE REDUCTION IN CO_2 EMISSIONS DUE TO THE SAVINGS IN THE ELECTRIC POWER CONSUMPTION

In order to quantify the impact of the electric power consumption on the CO_2 emissions the vehicle is to be tested on a chassis dynamometer by running a hot start NEDC test as specified in Annex 4a to Regulation No 83 of the Economic Commission for Europe of the United Nations (UN/ECE) — Uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements[6].

In order to ensure repeatability of the measurement, the power of the additional electrical load must be significantly higher than the potential electrical power saving of the LEDs (the saving is less than 40 W). An additional load causing an extra electrical power production of the alternator of ~750 W is to be therefore selected.

In total 10 hot start NEDC tests are to be performed of which five with and five without the additional load of ~750 Watt. In order to minimise the variability of the test results, the oil temperature, ambient temperature, and the time between the experiments are to be monitored and kept constant at the start of the test.

For these variables and for the road load setting the following specifications are to be followed:

— the road load setting of the chassis dynamometer is to be determined according to the procedure for the calibration of the dynamometer as defined in Annex 7 to Regulation No 83 (UN/ECE);

— the engine is to be warmed up at the start of the test, i.e. the oil temperature shall be 92 °C < T < 96 °C;

— the ambient temperature is to be 22,0 °C < T < 23,8 °C;

— the time between the tests is not to exceed 45 minutes.

The following measurements are to be performed:

— the electric output of the alternator measured with the additional electric load of ~750 W (5 tests) (potentiometer) and without the additional load (5 tests);

— CO_2 emissions.

5. DETERMINATION OF THE CO_2 EMISSIONS REDUCTIONS AND THE DETERMINATION OF THE STATISTICAL SIGNIFICANCE

The difference between the average CO_2 emissions resulting from the ten tests performed in accordance with point 4 is to be multiplied with the average electric power savings determined in accordance with point 3 divided by the difference between the average electric power consumption resulting from the two tests performed with and without the additional electric load, i.e.:

$$C_{iCO_2} = (M_{iC} - M_{iNC}) \times \frac{\Delta P_M}{P_{iC} - P_{iNC}}$$

C_{iCO_2} : CO_2 saving of the LED lights (g/km)

M_{iC}	:	CO_2 mass emissions with additional electric load (g/km)
M_{iNC}	:	CO_2 mass emissions without additional electric load (g/km)
ΔP_M	:	average electrical power saving by using LED (W)
P_{iC}	:	average electrical power consumption with additional consumer (W)
P_{iNC}	:	average electrical power consumption without additional consumer (W)

The statistical significance of the measured effects is to be determined by calculating the standard deviation of the measured CO_2 values (with and without the additional load) and by comparing the difference of the measured CO_2 values (with and without the additional load) with the standard deviation. The difference of the measured CO_2 values is to be more than 3 times the standard deviation.

(**1**) OJ L 140, 5.6.2009, p. 1.

(**2**) OJ L 194, 26.7.2011, p. 19.

(**3**) http://ec.europa.eu/clima/policies/transport/vehicles/cars/docs/guidelines_en.pdf (version of July 2011).

(**4**) OJ L 171, 29.6.2007, p. 1.

(**5**) OJ L 199, 28.7.2008, p. 1.

(**6**) OJ L 42, 15.2.2012, p. 1.

Status:
Point in time view as at 13/03/2013.

Changes to legislation:
There are outstanding changes not yet made to Commission Implementing Decision of 13 March 2013 on the approval of the use of light emitting diodes in certain lighting functions of an M1 vehicle as an innovative technology for reducing CO2 emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council (Text with EEA relevance) (2013/128/EU). Any changes that have already been made to the legislation appear in the content and are referenced with annotations.