No. 4789. AGREEMENT CONCERNING THE ADOPTION OF UNIFORM CONDITIONS OF APPROVAL AND RECIPROCAL RECOGNITION OF APPROVAL FOR MOTOR VEHICLE EQUIPMENT AND PARTS. DONE AT GENEVA, ON 20 MARCH 1958[1]

REGULATION No. 10:[2] UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO RADIO INTERFERENCE SUPPRESSION

Authentic texts: English and French.
Registered ex officio *on 1 April 1969.*

1. SCOPE

This Regulation applies to radio interference suppression equipment designed to limit the radio interference produced by motor vehicles equipped with a high-voltage ignition system.

2. DEFINITIONS

For the purposes of this Regulation,

2.1. "Approval of a vehicle" means the approval of a vehicle type with regard to radio interference suppression, as specified in paragraph 1 above;

2.2. "Vehicle type" means a category of motor vehicles which do not differ in such essential respects as:

2.2.1. the lines and constituent materials of the part of the body which constitutes the engine compartment and the part of the passenger compartment nearest to it;

2.2.2. the type of engine (whether two- or four-stroke, number and capacity of cylinders, number of carburettors, arrangement of valves, r.p.m. speed corresponding to maximum power etc.);

2.2.3. the position or model of the ignition circuit components (coil, distributor, sparking plugs, screening etc.);

2.2.4. the position of metal components housed in the engine compartment (e.g. heating appliances, spare wheel, air filter etc.);

2.3. "Limitation of radio interference" means the reduction of radio interference in the sound-broadcasting and television frequency bands to a level such that there is no appreciable interference with the functioning of receivers not carried on the vehicle itself; this condition shall be considered fulfilled if the level of interference remains below the limits prescribed in paragraph 6.2.2. below;

2.4. "Radio interference suppression equipment" means a complete set of components necessary for limiting radio interference by the ignition system of a motor vehicle. Radio interference suppression equipment also includes earthing strips and screening components incorporated specially for radio interference suppression;

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[1] United Nations, *Treaty Series*, Vol. 335, p. 211; for subsequent actions relating to this Agreement, see references in Cumulative Indexes Nos. 4 to 7, as well as Annex A in volumes 551, 552, 557, 566, 601, 606, 607, 609, 630, 631, 652, 656 and 659.

[2] Came into force on 1 April 1969 in respect of France and the United Kingdom of Great Britain and Northern Ireland, in accordance with paragraph 5 of article 1 of the Agreement.

2.5. "Suppression equipment of different types" means equipments which differ in such essential respects as:

2.5.1. that their components bear different trade names or marks;

2.5.2. that the "high-frequency" characteristics of a component are different or that the components differ in shape or size;

2.5.3. that the operating principles of at least one component are different;

2.5.4. that their components are assembled differently.

2.6. "Suppression-equipment component" means one of the individual constituent parts whose assembly constitutes the suppression equipment.

3. APPLICATION FOR APPROVAL

3.1. The application for approval of a vehicle type with regard to radio interference suppression shall be submitted by the vehicle manufacturer or by his duly accredited representative.

3.2. It shall be accompanied by the undermentioned documents in triplicate and the following particulars.

3.2.1. a description of the vehicle type with regard to the items mentioned in paragraph 2.2. above, accompanied by an exploded view or a photograph of the engine compartment. The number and/or symbols identifying the engine type and the vehicle shall be specified:

3.2.2. a list of the components, duly identified, constituting the radio interference suppression equipment;

3.2.3. detailed drawings of each component to enable it to be easily located and identified;

3.2.4. particulars of the nominal value of the resistances, measures on direct current, and more particularly, in the case of resistive ignition cables, of the nominal resistance per metre.

3.3. Further, the application for approval shall be accompanied by a sample of the radio interference suppression equipment.

3.4. A vehicle, representative of the vehicle type to be approved, shall be submitted to the technical service conducting approval tests.

4. MARKINGS

4.1. The suppression equipment components shall bear:

4.1.1. the trade name or mark of the manufacturer of the equipment and of its components;

4.1.2. the trade description given by the manufacturer.

4.2. The markings shall be repeated on the radio interference suppression cables at intervals of not more than twelve centimetres.

4.3. Such markings shall be clearly legible and be indelible.

5. APPROVAL

5.1. If the vehicle type submitted for approval pursuant to this Regulation meets the requirements of paragraph 6. below, approval of that vehicle type shall be granted.

5.2. An approval number shall be assigned to each type approved. The same Contracting Party may not assign the same number to the same vehicle type equipped with another type of radio interference suppression equipment or to another vehicle type.

5.3. Notice of approval or of refusal of approval of a vehicle type pursuant to this Regulation shall be communicated to the Parties to the Agreement which apply this Regulation by means of a form conforming to the model in annex 1 to the Regulation, of drawings of the radio interference suppression equipment (supplied by the applicant for approval) in a format not exceeding A 4 (210×297 mm) or folded to this format and on an appropriate scale, and either the exploded view of the engine compartment, or the photograph thereof, referred to in paragraph 3.2.1. above.

5.4. There shall be affixed conspicuously and in a readily accessible place specified on the approval form, to every vehicle conforming to a vehicle type approved under this Regulation, an international approval mark consisting of:

5.4.1. a circle surrounding the letter "E", followed by the distinguishing number of the country which has granted approval;[1]

5.4.2. the number of this Regulation, followed by the letter "R", a dash and the approval number, below the circle.

5.5. The approval mark shall be clearly legible and be indelible.

5.6. Annex 2 to this Regulation gives an example of the arrangements of the approval mark.

6. SPECIFICATIONS

6.1. *General specifications*

The components of the radio interference suppression equipment shall be so designed, constructed and fitted as to enable the vehicle, in normal use, to comply with the provisions of this Regulation.

6.2. *Radio-electrical specifications*

6.2.1. *Method of measurement*

The interfering radiation set up by the vehicle type submitted for approval shall be measured by the method described in annex 3 to this Regulation.

6.2.2. *Reference limits*

6.2.2.1. The radiation limits based on quasi-peak measurements shall be 50 μ V/m in the 40-75 MHz frequency band and 50-120 μ V/m in the 75-250 MHz frequency band, this limit increasing linearly with frequencies above 75 MHz.

6.2.2.2. If measurements are made with peak-measuring equipment, the readings expressed in μ V/m shall be divided by 10.

[1] 1 for the Federal Republic of Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for Czechoslovakia, 9 for Spain, 10 for Yugoslavia and 11 for the United Kingdom; subsequent numbers shall be assigned to other countries in the chronological order in which they ratify the Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, or in which they accede to that Agreement, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

6.2.3. On the vehicle type submitted for approval with regard to radio interference suppression, the measured values shall be not less than 20 per cent below the reference limits.

7. TESTS

Compliance with the requirements of paragraph 6 above shall be checked in accordance with the method set out in annex 3 to this Regulation.

8. MODIFICATIONS OF THE VEHICLE TYPE OR OF THE TYPE OF RADIO INTERFERENCE SUPPRESSION EQUIPMENT

8.1. Every modification of the vehicle type and of the type of radio interference suppression equipment shall be notified to the administrative department which has granted approval of the vehicle type. The department may then either:

8.1.1. consider that the modifications made are unlikely to have an appreciable adverse effect; or

8.1.2. require a further test report from the technical service conducting the test.

8.2. Confirmation or refusal of approval shall be communicated to the Parties to the Agreement applying this Regulation in accordance with the procedure indicated in paragraph 5.3. above.

9. CONFORMITY OF PRODUCTION

9.1. Every vehicle bearing an approval mark as prescribed under this Regulation shall conform to the vehicle type approved, be fitted with the type of radio interference suppression equipment with which the vehicle type was approved and satisfy the requirements of paragraph 6.1. above.

9.2. In order to verify conformity as prescribed in paragraph 9.1. above, a vehicle, bearing the approval mark required by this Regulation, shall be taken from the series. Production shall be deemed to conform to the requirements of this Regulation if the levels measured do not exceed by more than 25 per cent the limits prescribed in paragraph 6.2.2.

9.3. If one at least of the levels measured on the vehicle taken from the series exceeds the limits prescribed in paragraph 6.2.2. by more than 25 per cent, the manufacturer may request that measurements be made on a sample of at least six vehicles taken from the series. The results for each frequency band shall be interpreted by the statistical method described in annex 4 to this Regulation.

10. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

10.1. The approval granted in respect of a vehicle type pursuant to this Regulation may be withdrawn, if the requirements laid down in paragraph 9.1. are not complied with or if the vehicle fails to pass the tests provided for in paragraph 9.2. above.

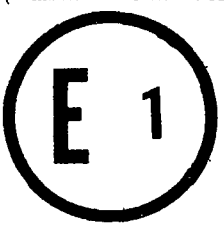
10.2. If a Party to the Agreement which applies this Regulation withdraws an approval it has previously granted, it shall forthwith notify the other Contracting Parties applying this Regulation thereof by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation "Approval withdrawn".

11. NAMES AND ADDRESSES OF TECHNICAL SERVICES CONDUCTING APPROVAL TESTS AND ADMINISTRATIVE DEPARTMENTS

The Parties to the Agreement applying this Regulation shall communicate to the United Nations Secretariat the names and addresses of the technical services conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or refusal or withdrawal of approval, issued in other countries, are to be sent.

ANNEX 1

(Maximum format: A 4 (210 × 297 mm))



NAME OF ADMINISTRATION

Communication concerning the approval (or refusal or withdrawal of approval) of a vehicle type with regard to radio interference suppression pursuant to Regulation No. 10

Approval No. .....

1. Trade name or mark of the motor vehicle .....
2. Vehicle type .....
3. Manufacturer's name and address .....
4. If applicable, name and address of manufacturer's representative .....
5. Brief description of the radio interference suppression equipment and of the vehicle fitted with such equipment .....
6. Vehicle submitted for approval on .....
7. Technical service conducting approval tests .....
8. Date of report issued by that service .....
9. Number of report issued by that service .....
10. Approval granted/refused* .....
11. Position of approval mark on the vehicle .....
12. Place .....
13. Date .....
14. Signature .....
15. The following documents, bearing the approval number shown above, are annexed to this communication:

.....drawings, diagrams and plans of the engine and of the engine compartment;

.....photographs of the engine and of the engine compartment;

.....list of components, duly identified, constituting the radio interference suppression equipment.

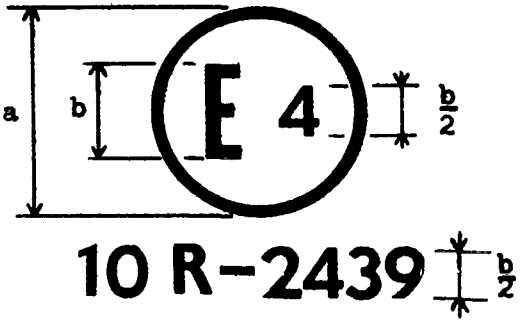
* Strike out whatever does not apply.

ANNEX 2

ARRANGEMENT OF THE APPROVAL MARK

	a	b
Minimum dimensions	12	5.6

(millimetres)



The above approval mark affixed to a vehicle shows that, pursuant to Regulation No. 10 the vehicle type concerned has, with regard to radio interference suppression, been approved in the Netherlands (E 4) under approval No. 2439.

ANNEX 3

METHOD OF MEASUREMENT OF RADIO INTERFERENCE PRODUCED BY IGNITION SYSTEMS

1. MEASURING APPARATUS

The measuring equipment shall comply with the requirements of Publication No. 2 (First edition 1961) of the International Special Committee on Radio Interference (CISPR) or with the specifications applicable to peak type measuring apparatus given in CISPR publication No. 5 (First edition, 1967). *Note:* Where the available equipment does not fully meet all CISPR specifications, discrepancies must be clearly stated.

2. EXPRESSION OF RESULTS

The results of measurements shall be expressed in μ V/m for 120 kHz bandwidth. For statistical purposes, the logarithmic unit dB (μ V/m) shall be used. If the actual bandwidth B (expressed in kHz) of the measuring apparatus is just outside the CISPR limits for a certain frequency, it is recommended that the results measured for that frequency be related to the 120 kHz bandwidth by applying factor $\frac{120}{B}$.

3. MEASURING SITE

The measuring site shall be a level area free from appreciable wave reflecting surfaces within an ellipse having a major axis of 20 m and a minor axis of 17.3 m, the side of the car and the antenna being located at the focal points. The measuring set, or the test hut or vehicle in which the set is located, may be within the ellipse but horizontally not closer than 3 m to the antenna, in a direction opposite to the vehicle being measured. Furthermore, the absence of any extraneous noise or signal which could materially affect the measurement must be ensured; a check is therefore made, with the engine stopped, before and after taking the measurements, which can be regarded as satisfactory only if the readings are at least 10 dB above the highest obtained at the pre- and post-measurement checks.

4. VEHICLE

4.1. Only the ancillary electrical equipment necessary to run the engine shall be operating.

4.2. The engine shall be at normal operating temperature. During each measurement, the engine shall be operated as follows:

Number of cylinders	*Method of measurement*	
	Peak	*Quasi-peak*
One	Above idling	2 500 rev/min
More than one	Above idling	1 500 rev/min

4.3. Measurements shall not be made while rain is falling on the vehicle nor within 10 minutes after the rain has stopped.

5. ANTENNA

5.1. *Height*

The centre of the dipole shall be 3 m (10 ft) above the ground.

5.2. *Distance of measurement*

The horizontal distance of the antenna to the nearest metal part of the vehicle shall be 10 m (33 ft).

5.3. *Antenna location relative to vehicle*

The antenna shall be placed successively on the left- and right-hand sides of the vehicle, at two positions of measurement, with the aerial parallel to the plane of symmetry of the vehicle and in line with the engine. (See appendix to this annex.)

5.4. *Antenna position*

At each of the measuring points, readings shall be taken with the dipole in a horizontal and in a vertical position. (See appendix to this annex.)

5.5. *Readings*

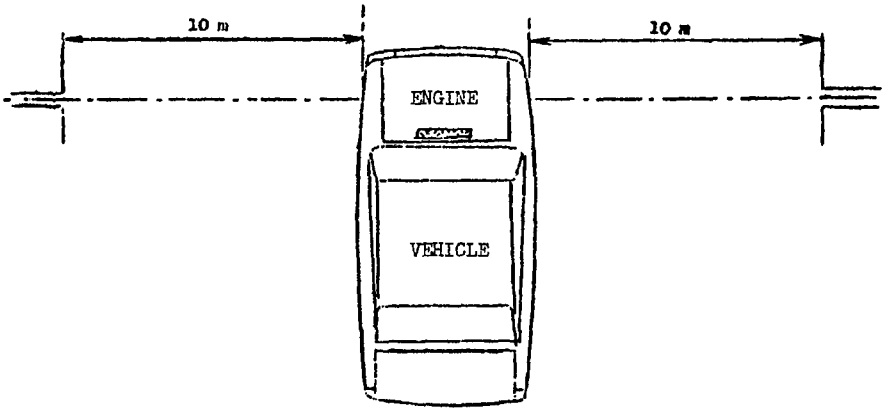
The maximum of four readings shall be taken as the characteristic reading at the frequency at which the measurements have been made.

6. FREQUENCIES

Measurements shall be made within the range 40 to 250 MHz. It is considered that a vehicle will most probably meet the required suppression limits over the whole frequency range if it meets them for the following six preferred spot frequencies within the ranges of: 45, 65, 90, 150, 180 and 220 (±5 MHz). (A tolerance of 5 MHz is applied to the six frequencies quoted and is intended to avoid interference from transmissions operating on the nominal spot frequencies during the time of measurement.)

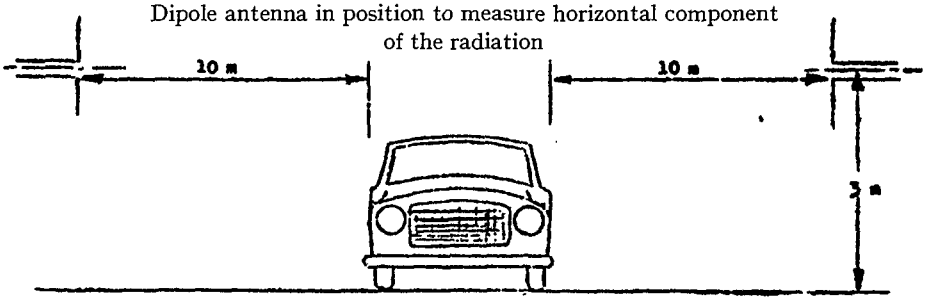
ANNEX 3 — *Appendix*

Antenna location relative to vehicle



PLAN

Dipole antenna in position to measure horizontal component of the radiation



ELEVATION

Dipole antenna in position to measure vertical component of the radiation

ANNEX 4

STATISTICAL METHOD OF CHECKING RADIO INTERFERENCE SUPPRESSION

The following conditions must be fulfilled in order to ensure with an 80% probability, that 80% of vehicles mass-produced conform to a specified limit L.

$$\bar{x} + kS_n \leqslant L$$

where: $\bar{x}$ = arithmetical mean of the results on n vehicles

k = statistical factor dependent on n given by the following table:

n = 6	7	8	9	10	11	12
k = 1.42	1.35	1.30	1.27	1.24	1.21	1.20

S_n = standard deviation of results on n vehicles

x = individual result

$S_n 2 = \Sigma (x - \bar{x})^2/(n - 1)$

L = specified limit

S_n, x, $\bar{x}$ and L are expressed in dB (μ v/m)

If a first sample of n vehicles does not meet the specification, a second sample of n vehicles may be tested and all the results assessed as coming from a sample of 2n vehicles.