

COUNCIL DIRECTIVE

of 20 May 1975

on the approximation of the laws of the Member States relating to the suppression of radio interference produced by spark-ignition engines fitted to wheeled agricultural or forestry tractors

(75/322/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof;

Having regard to the proposal from the Commission;

Having regard to the Opinion of the European Parliament ⁽¹⁾;

Having regard to the Opinion of the Economic and Social Committee ⁽²⁾;

Whereas the technical requirements with which tractors must comply pursuant to national laws relate, *inter alia*, to the suppression of radio interference;

Whereas these requirements differ from one Member State to another; whereas it is therefore necessary that all Member States adopt the same requirements either in addition to or in place of their existing rules, in particular to allow the EEC type approval procedure which was the subject of Council Directive 74/150/EEC ⁽³⁾ of 4 March 1974 on the approximation of the laws of the Member States relating to the type approval of wheeled agricultural or forestry tractors to be applied in respect of each type of tractor,

HAS ADOPTED THIS DIRECTIVE :

Article 1

1. 'Agricultural or forestry tractor' means any motor vehicle fitted with wheels or caterpillar tracks and having at least two axles, the main function of which lies in its tractive power and which is specially designed to tow, push, carry or power

certain tools, machinery or trailers intended for agricultural or forestry use. It may be equipped to carry a load and passengers.

2. This Directive shall apply only to tractors defined in the preceding paragraph, fitted with pneumatic tyres, and which have two axles and a maximum design speed of between 6 and 25 km/h and a spark-ignition engine.

Article 2

No Member State may refuse to grant EEC type approval or national type approval of a tractor on grounds relating to the radio interference produced by the spark-ignition system of its propulsion engine if such tractors are fitted with interference suppression equipment meeting the requirements of the Annexes.

Article 3

No Member State may refuse the registration or prohibit the sale, entry into service or use of a tractor on grounds relating to the radio interference produced by the spark-ignition system of its propulsion engine if such tractors are fitted with interference suppression equipment meeting the requirements of the Annexes.

Article 4

A Member State which has granted type approval shall take the necessary measures to be informed of any modification of a part or characteristic referred to in 2.2 — Annex I. The competent authorities of that State shall determine whether fresh tests should be carried out on the modified type of the tractor and a fresh report drawn up. Where such tests reveal failure to comply with the requirements of this Directive, the modification shall not be approved.

⁽¹⁾ OJ No C 160, 18. 12. 1969, p. 29.

⁽²⁾ OJ No C 48, 16. 4. 1969, p. 21.

⁽³⁾ OJ No L 84, 28. 3. 1974, p. 10.

Article 5

The amendments necessary for adapting the requirements of the Annexes to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 74/150/EEC.

Article 6

1. Member States shall bring into force the provisions necessary in order to comply with this Directive within 18 months of its notification and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the main provisions of national law which they adopt

in the field covered by this Directive are communicated to the Commission.

Article 7

This Directive is addressed to the Member States.

Done at Brussels, 20 May 1975.

For the Council

The President

R. RYAN

ANNEX I⁽¹⁾

DEFINITIONS, APPLICATION FOR EEC TYPE APPROVAL, MARKINGS, EEC TYPE APPROVAL, SPECIFICATIONS, TESTS, CONFORMITY OF PRODUCTION

(1.)

2. DEFINITIONS

For the purposes of this Directive,

(2.1.)

2.2. 'Tractor type as regards radio interference suppression' means tractors which do not differ in such essential respects as:

2.2.1. The shapes and constituent materials of the part of the body forming 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, maximum power and corresponding r.p.m.).

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 a 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 is fulfilled if the level of interference remains below the limits laid down in 6.2.2 below;

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

2.5. 'Suppression equipment of different types' means sets of equipment 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 their 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.

⁽¹⁾ The text of the Annexes corresponds to that of Council Directive 72/245/EEC of 20 June 1972 on the approximation of the laws of the Member States relating to the suppression of radio interference produced by spark-ignition engines fitted to motor vehicles (OJ No L 152, 6. 7. 1972, p. 15).

2.6. 'Suppression equipment component' means one of the individual constituent parts of the suppression equipment.

3. APPLICATION FOR EEC TYPE APPROVAL

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

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

3.2.1. A description of the tractor type with regard to the items mentioned in 2.2 above, accompanied by an exploded view or a photograph of the engine compartment. The numbers and/or symbols identifying the engine type and the tractor type shall be shown.

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 direct-current resistances, and, in the case of resistive ignition cables, of their nominal resistance per metre.

3.3. In addition, the application for EEC type approval shall be accompanied by a sample of the radio interference suppression equipment.

3.4. A vehicle representative of the tractor type to be approved shall be submitted to the technical service responsible for the type approval tests.

4. MARKINGS

4.1. The radio interference suppression equipment components shall bear:

4.1.1. The trade name or mark of the manufacturers of the equipment and 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. These markings shall be clearly legible and indelible.

5. TYPE APPROVAL

(5.1.)

(5.2.)

5.3. A form conforming to the model in Annex IV shall be attached to the EEC type approval certificate.

(5.4.)

(5.5.)

(5.6.)

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 tractor, in normal conditions of use, to comply with the requirements of this Directive.

6.2. Specifications concerning radio interference

6.2.1. *Method of measurement*

The interfering radiation set up by the tractor type submitted for approval shall be measured by the method described in Annex II.

6.2.2. *Reference limits*

6.2.2.1. The radiation limits based on quasi-peak measurements shall be 50 $\mu\text{V/m}$ in the 40-75 MHz frequency band and 50-120 $\mu\text{V/m}$ 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 $\mu\text{V/m}$, shall be divided by 10.

6.2.3. On the tractor type submitted for approval in respect of 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 section 6 above shall be checked in accordance with the method shown in Annex II.

(8.)

9. CONFORMITY OF PRODUCTION

(9.1.)

9.2. When the conformity of a tractor taken from the series is being verified, production shall be deemed to conform to the requirements of this Directive if the levels measured do not exceed by more than 25 % the limits prescribed in 6.2.2.

9.3. If at least one of the levels measured on the tractor taken from the series exceeds the limits prescribed in 6.2.2. by more than 25 %, the manufacturer may request that measurements be made on a sample of at least six tractors taken from the series. The results for each frequency band shall be interpreted by the statistical method shown in Annex III.

(10.)

(11.)

ANNEX II

METHOD OF MEASUREMENT OF RADIO INTERFERENCE PRODUCED BY HIGH-VOLTAGE 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 the CISPR specifications, discrepancies must be clearly stated.

2. EXPRESSION OF RESULTS

The results of measurements must be expressed in $\mu\text{V/m}$ for 120 kHz bandwidth. For statistical purposes, the logarithmic unit dB ($\mu\text{V/m}$) shall be used. If for certain frequencies the actual bandwidth B (expressed in kHz) of the measuring apparatus differs slightly from 120 kHz, the readings taken should be converted to 120 kHz bandwidth through multiplication by a 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 antenna and the centre of the engine must be located on the major axis of the ellipse, the plane of symmetry of the tractor being parallel to the minor axis. The antenna and the point of intersection of the side of the engine nearest to the antenna with the major axis must each be located at a focal point of the ellipse. 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 tractor being measured. Furthermore, the absence of any extraneous 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 considered satisfactory only if the readings are at least 10 dB above the highest obtained at the pre- and post-measurement checks.

4. TRACTOR

- 4.1. Only the ancillary electrical equipment necessary for the running of the engine shall be operating.
- 4.2. The engine shall be at its 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 r.p.m.
More than one	Above idling	1 500 r.p.m.

- 4.3. Measurements shall not be made while rain is falling on the vehicle or within 10 minutes after rain has stopped.

5. ANTENNA

5.1. Height

The centre of the dipole shall be 3 m above the ground.

5.2. Distance of measurement

The horizontal distance from the antenna to the nearest metal part of the tractor shall be 10 m.

5.3. Antenna location relative to tractor

The antenna shall be placed successively on the left- and right-hand sides of the tractor at two positions of measurement, with the aerial parallel to the plane of symmetry of the tractor 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 were made.

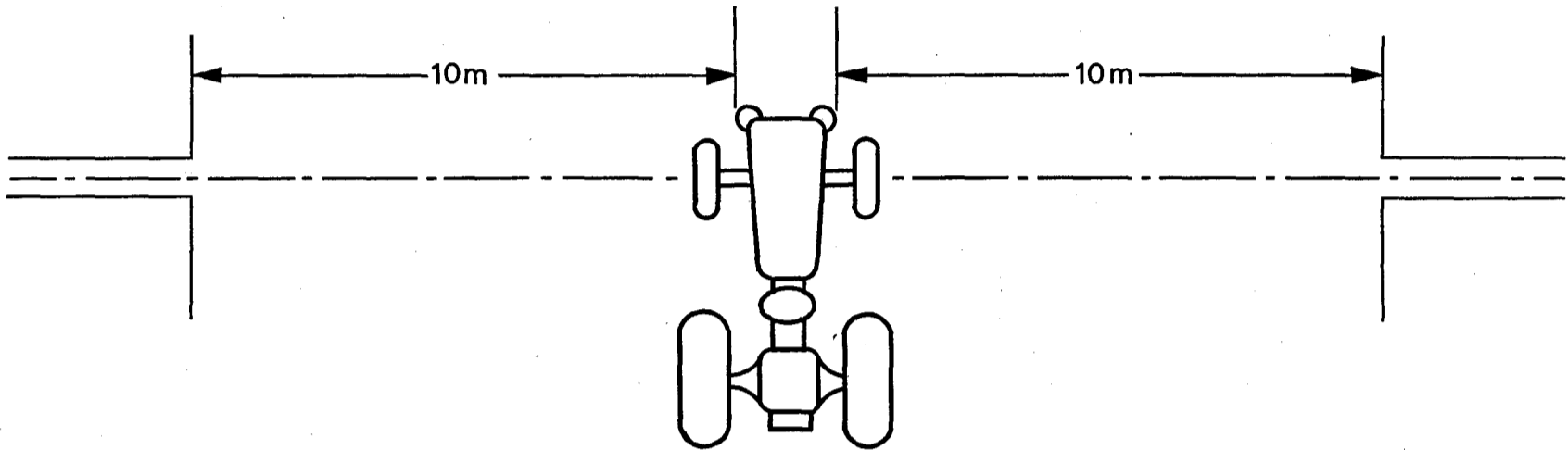
6. FREQUENCIES

Measurements shall be made within the 40 to 250 MHz range. A tractor is considered as very likely to meet the required suppression limits over the whole frequency range if it meets them at the following six frequencies: 45, 65, 90, 150, 180 and 220 (± 5 MHz). (The 5 MHz tolerance for the six frequencies chosen should make it possible to avoid interference from transmissions operating on the nominal frequencies).

Appendix

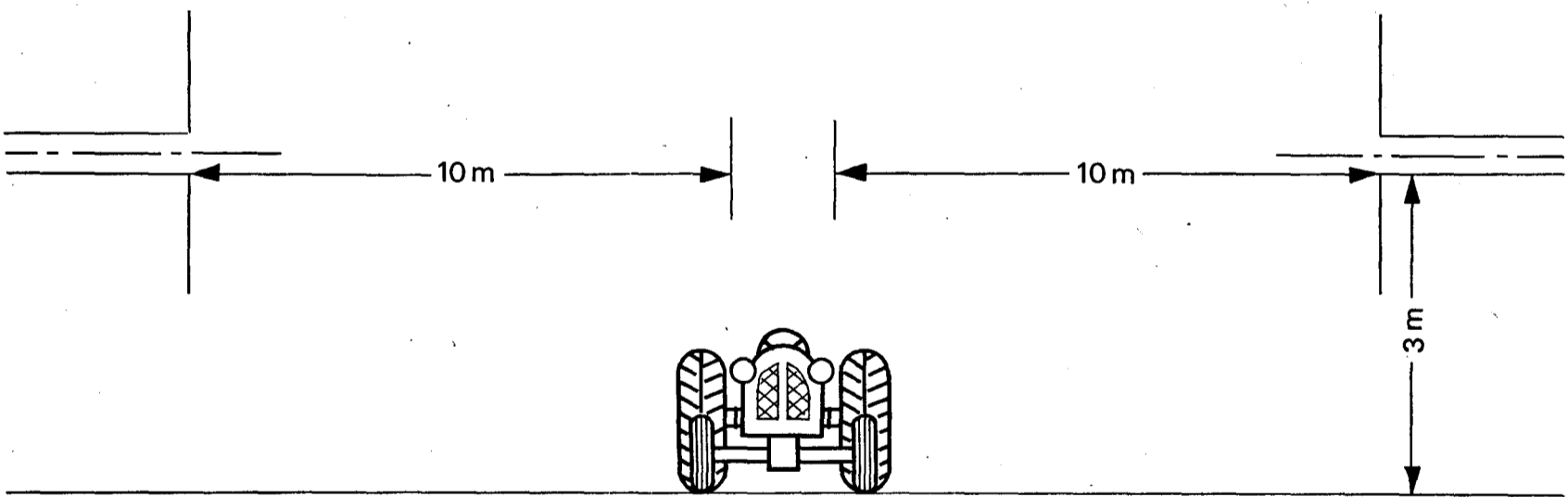
ANTENNA DIRECTION RELATIVE TO TRACTOR

Example



Plan

Dipole antenna in position to measure horizontal component of the radiation



Elevation

Dipole antenna in position to measure horizontal component of the radiation

ANNEX III

STATISTICAL METHOD OF CHECKING RADIO INTERFERENCE SUPPRESSION

In order to ensure with an 80 % probability that 80 % of the vehicles conform to a specified limit L, the following condition must be satisfied:

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

where \bar{x} = arithmetic mean of the results on n tractors

k = statistical factor which depends on n as shown in 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 tractors

$$S_n^2 = \frac{\sum (x - \bar{x})^2}{(n - 1)}$$

x = individual result

L = specified limit

S_n , x, \bar{x} and L expressed in dB (μ V/m).

If a first sample of n tractors does not meet the specification, a second sample of n tractors shall be tested and the overall results assessed as coming from a sample of 2n tractors.

ANNEX IV

Name of administration

MODEL

COMMUNICATION CONCERNING THE APPROVAL OF AN AGRICULTURAL OR FORESTRY TRACTOR TYPE WITH REGARD TO RADIO INTERFERENCE SUPPRESSION

- Type Approval No
- 1. Mark (Trade name)
- 2. Tractor type and commercial description
-
- 3. Name and address of manufacturer
- 4. If applicable, name and address of manufacturer's authorized representative
-
- 5. Brief description of the radio interference suppression equipment and of the tractor fitted with such equipment
-
- 6. Tractor submitted for type approval on
- 7. Technical service responsible for type approval tests
-
- 8. Date of report issued by that service
- 9. Number of report issued by that service
- 10. Type approval as regards radio interference suppression has been granted/refused ⁽¹⁾
- 11. Place
- 12. Date
- 13. Signature
- 14. The following documents, bearing the type 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.

⁽¹⁾ Delete whichever is inapplicable.