II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION DIRECTIVE

of 7 June 1982

adapting to technical progress Council Directive 76/889/EEC on the approximation of the laws of the Member States relating to radio interference caused by electrical household appliances, portable tools and similar equipment

(82/499/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 76/889/EEC of 4 November 1976 on the approximation of the laws of the Member States relating to radio interference caused by electrical household appliances, portable tools and similar equipment (1), and in particular Article 7 (3) thereof,

Whereas, in view of experience gained and of the state of the art, it is now possible to match the requirements of the Annex to the abovementioned Directive more closely to actual test conditions;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee on the Adaptation to Technical Progress of the Directives for the elimination of Technical Barriers to Trade in the Sector of Apparatus Producing Radio Interference,

HAS ADOPTED THIS DIRECTIVE:

Article 1

The Annex to Directive 76/889/EEC is replaced by the Annex to this Directive.

Article 2

The Member States shall, by 1 December 1983, adopt and publish the provisions required to comply with this Directive and shall forthwith inform the Commission thereof.

They shall apply these provisions as from the same date as regards the freedom to market and use the equipment, provided for in Article 4 of Directive 76/889/EEC, and as from 1 December 1984 as regards the ban on marketing referred to in Article 2 thereof.

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 7 June 1982.

For the Commission

Karl-Heinz NARJES

Member of the Commission

(1) OJ No L 336, 4. 12. 1976, p. 1.

ANNEX

1. (1) SCOPE

1.1. These provisions shall apply to electrical household appliances, portable tools and other electrical equipment causing similar types of interference, continuous or discontinuous, such as office machines, cine or slide projectors, record players, milking machines, motor-operated electromedical apparatus, regulating controls incorporating semi-conductors, electric fences, vending machines and slot-machines, etc., excluding appliances using in-built batteries.

1.2. Procedures are given for the measurement of interference and limits are laid down within the frequency range 0·15 to 300 MHz. There must be 80 % confidence that at least 80 % of the series-produced appliances comply with these limits.

1.3. Portable tools with a rated power exceeding 2 kW and regulating controls incorporating semiconductors with a rated input current exceeding 16 A are excluded from the scope of this Directive.

1.4. Unattached motors, sold as such, are also excluded from the provisions of Items 4 *et seq.* They shall carry a label drawing the attention of the user to the fact that he is responsible for any action necessary to ensure that his equipment complies with the requirements laid down.

(2.)

3. DEFINITIONS

For the purpose of this Directive the following definitions shall apply.

3.1. **Continuous interference**

Continuous interference may arise from either impulsive or random noise or may be a superposition of these, the disturbance lasting for more than 200 ms.

3.2. **Discontinuous interference**

Interference which is not continuous. In the calculation of limits and the measurement of discontinuous interference the following definitions are used.

3.2.1. *Click*

A disturbance which lasts not more than 200 ms, and which is separated from a subsequent disturbance by at least 200 ms. A click may contain a number of impulses. Examples of discontinuous interference which are classified as clicks are shown in Figures 1a, 1b and 1c.

3.2.2. *Counted click*

Click which exceeds the limit of continuous interference.

3.2.3. *Switching operation*

One opening or one closing of a switch or contact.

(1) Point 1 of the Annex to Council Directive 76/889/EEC.

3.2.4. *Minimum observation time*

In general, the time taken to register 40 counted clicks or, for appliances listed in Table II, Appendix A, to count 40 switching operations. For appliances which do not stop automatically, the time to register 40 counted clicks or, where relevant, 40 switching operations. For appliances which stop automatically, the operating time of the minimum number of complete programmes required to produce at least 40 counted clicks or, where relevant, 40 switching operations. The interval between the end of one programme and the start of the next programme shall be excluded from the minimum observation time, except (a) where specified (e.g. Item 5.3.5.13), or (b) in the case of appliances in which an immediate restart is inhibited; in both cases the minimum time required to restart the programme shall be included in the minimum observation time.

The minimum observation time shall not exceed 120 minutes.

3.2.5. *Click rate N*

The figure which is used to determine the permitted limit for discontinuous interference (Item 3.2.6). In general N is the number of counted clicks per minute determined from the formula $N = n_1/T$; n_1 being the number of counted clicks during the observation time T minutes.

For certain appliances (see Item 4.2.4.6) the click rate N is determined from the formula $N = fn_2/T$, where n_2 is the number of switching operations during the observation time T and f is a factor given in Table II of Appendix A.

3.2.6. *Permitted limit L_q (for counted clicks)*

The relevant limit for continuous interference increased by a specified amount (given in Items 4.2.3.3 and 4.2.4).

3.2.7. *Typical value*

The typical value of clicks is that allocated to the appliance according to the upper quartile method, the appliance being tested for a time T not less than the minimum observation time. If the click rate N is determined from the number of counted clicks, the appliance under test shall be deemed to comply with the limit if not more than a quarter of the number of counted clicks registered during the observation time are higher than the permitted limit (see Item 3.2.6).

If the click rate N is determined from the number of switching operations (see Item 3.2.5), the appliance under test shall be deemed to comply with the limit if the number of clicks exceeding the permitted limit is not more than a quarter of the number of switching operations.

Note: An example of the application of the upper quartile method is given in Apppendix B.

3.3. **Duty cycle**

The duty cycle is the ratio of the time during which the contacts are closed to the total time expressed as a percentage.

4. INTERFERENCE LIMITS

4.1. Continuous interference

4.1.1. *Frequency range: 0·15 to 30 MHz (terminal voltages)*

The measuring equipment shall comply with CISPR Publication 16 (1977), 'CISPR Specification for Radio Interference Measuring Apparatus and Measurement Methods'. The operating condi-

tions and methods of measurement are given in Item 5 and 6, respectively, of this Annex. The limits of the terminal voltages measured with the 50 Ω artificial mains V-network (see Item 6.1.2) are given in Table I.

TABLE I

Terminal voltage limits for the frequency range 0·15 to 30 MHz

Frequency range	Electrical household appliances and appliances causing similar interference	Regulating controls not incorporated within an appliance		
		At mains terminals	At load terminals	At additional terminals
(MHz)	dB (μV)	dB (μV)	dB (μV)	dB (μV)
0·15 to 0·50	Decreasing linearly with the logarithm of the frequency from 66 to 56	Decreasing linearly with the logarithm of the frequency from 66 to 56	80	80
0·50 to 5	56	56	74	74
5 to 30	60	60	80	80

Frequency range	Portable tools		
	Rated power of motor		
	Not exceeding 700 W	Above 700 W and not exceeding 1 000 W	Above 1 000 W and not exceeding 2 000 W
(MHz)	dB (μV)	dB (μV)	dB (μV)
0·15 to 0·35	Decreasing linearly with the logarithm of the frequency from 66 to 59	Decreasing linearly with the logarithm of the frequency from 70 to 63	Decreasing linearly with the logarithm of the frequency from 76 to 69
0·35 to 5	59	63	69
5 to 30	64	68	74

4.1.2. *Frequency range 30 MHz to 300 MHz (interference power)*

The measuring equipment shall comply with CISPR Publication 16 (1977), 'CISPR Specification for Radio Interference Measuring Apparatus and Measurement Methods'.

The operating conditions and methods of measurement are given in Items 5 and 7 respectively, of this Annex.

The limits of interference power, measured with the absorbing clamp (see Item 7) are given in Tables II and III below:

TABLE II

Interference power limits for the frequency range 30 to 300 MHz

Frequency range	Electrical household appliances and appliances causing similar interference	Portable tools		
		Rated power of motor		
		Not exceeding 700 W	Above 700 W and not exceeding 1 000 W	Above 1 000 W and not exceeding 2 000 W
MHz	dB (pW)	dB (pW)	dB (pW)	dB (pW)
30 to 300	45 increasing linearly with frequency to 55	45 increasing linearly with frequency to 55	49 increasing linearly with frequency to 59	55 increasing linearly with frequency to 65

TABLE III

Interference power limits at the preferred frequencies

Preferred frequencies	Electrical household appliances and appliances causing similar interference	Portable tools		
		Rated power of motor		
		Not exceeding 700 W	Above 700 W and not exceeding 1 000 W	Above 1 000 W and not exceeding 2 000 W
MHz	dB (pW)	dB (pW)	dB (pW)	dB (pW)
30	45	45	49	55
45	46	46	50	56
65	46	46	50	56
90	47	47	51	57
150	49	49	53	59
180	51	51	55	61
220	52	52	56	62
300	55	55	59	65

4.2. **Discontinuous interference**

4.2.1. Switching operations in thermostatically controlled appliances, automatic programme-controlled appliances and other electrically controlled or operated appliances generate discontinuous interference. The subjective effect of discontinuous interference varies with repetition rate and amplitude. For that reason, a distinction is made between various kinds of discontinuous interference. The measuring equipment used is specified in CISPR Publication 16 (1977), 'CISPR Specification for Radio Interference Measuring Apparatus and Measurement Methods'.

(4.2.2.)

4.2.3. The following limits and conditions shall apply (except as detailed in Item 4.2.4).