

**DECREE OF THE PRESIDENT OF THE COUNCIL OF MINISTERS
8 JULY 2003**

**Establishment of exposure limits, attention values, and quality goals
to protect the population against electric, magnetic, and electromagnetic fields
generated at frequencies between 100 kHz and 300 GHz**

THE PRESIDENT OF THE COUNCIL OF MINISTERS

[Omissis]

Decreases:

Art. 1

Scope

1. The present decree sets exposure limits and attention values to prevent both short-term effects and possible long-term effects on the population from exposure to electromagnetic fields generated by fixed sources at frequencies between 100 kHz and 300 GHz. The decree also sets quality goals which are aimed at the progressive minimisation of exposure, and procedures for the measurement of exposure levels.
2. Exposure limits, attention values and quality goals of the present decree do not apply to workers exposed by reason of their occupation, or to exposures arising from diagnosis and therapy.
3. The application of the present decree to radar emissions and other sources of pulsed fields will be established at a future date by a further decree of the President of the Council of Ministers, according to the provisions of Art. 4, Paragraph 2, Letter (a) of Law 22 February 2001, No. 36.
4. For protection against exposure to electric, magnetic, and electromagnetic fields in the frequency range 100 kHz – 300 GHz generated by sources other than fixed systems for telecommunication and radio-TV broadcasting, the restrictions set out in the EU Recommendation 12 July 1999 - published in the O.J.E.C. on July 30, 1999 - are applied in their entirety.
5. In pursuance of Art. 1, Paragraph 2 of Law 22 February 2001, No. 36, the special-status regions and the autonomous provinces of Trento and Bolzano are taking measures to achieve the aims of the present decree through the powers assigned to them in accordance with their statutes, their relevant implementing regulations, and the provisions of their respective structures.
6. In pursuance of Art. 2, Paragraph 3, of Law 22 February 2001, No. 36, the application of the present decree to Military corps and Police will be established at a future date by a further decree of the President of the Council of Ministers, upon

receipt of a proposal by the Minister of the Environment and Protection of Territory, taking into account special service needs.

Art. 2
Definitions

1. The definitions of the physical quantities mentioned in the present decree are reported in Annex A, in addition to definitions set out in Art. 3 of Law 22 February 2001, No. 36, that are unchanged.

Art. 3
Exposure limits and attention values

1. In case of exposure to devices generating electric, magnetic, and electromagnetic fields in the frequency range 100 kHz – 300 GHz, the exposure limits reported in Annex B, Table 1, expressed as rms values, shall not be exceeded.
2. As a cautionary measure to protect against any possible long-term effects that might be related to exposure to fields at the aforementioned frequencies, the attention values reported in Annex B, Table 2 are adopted in children's playgrounds, residential dwellings, school premises, and in areas where people are staying for 4 hours or more per day, as well as in outdoor annexes that may be used as residential environments, such as balconies, terraces, courtyards, but excluding roof pavings.
3. The values referred to in Paragraphs 1 and 2 of the present article shall be averaged over any six-minute period in an area equivalent to the vertical cross-section of the human body.

Art. 4
Quality goals

1. In order to progressively minimise exposure to electromagnetic fields, the calculated or measured values of fields that are the subject of the present decree, shall not, in highly frequented outdoor areas, exceed the values set out in Annex B, Table 3. The values shall be averaged over any six-minute period in an area equivalent to the vertical cross-section of the human body.
2. Highly frequented areas shall include buildings or permanent structures employed for social, health, or recreational needs.

Art. 5
Multiple exposures

In case of multiple exposures to different sources, the sum of the corresponding normalised contributions, as defined in Annex C, shall be less than unity. Otherwise, exposure shall be brought to compliance as described in Annex C. If emissions from military corps and/or police devices contribute to the infringement of the limits, then the procedures employed to bring about compliance shall take into account the needs of these services.

Art. 6

Procedures for measurement and assessment of exposure levels

1. Measurements and exposure assessment shall be made in accordance with the Standard CEI 211-7, and/or further relevant standards issued by CEI.
2. The System of Agencies (APAT-ARPA) will contribute to the development of the CEI standards, following approval by the Ministry of the Environment and Protection of Territory.

Art. 7

Update of knowledge

Within three years from the implementation of the present decree, the interministerial Committee described in Art. 6 of the Framework Law No. 36/2001 shall update the status of the science on possible health risks of electromagnetic fields, based on the findings of scientific research at the national and international level.

Translator's Notes

CEI (Comitato Elettrotecnico Italiano) is the Italian Electrotechnical Committee. CEI is member of CENELEC, and CEI Standards are often endorsement of CENELEC Standards, designated by the same number.

APAT (Agenzia per la Protezione dell'Ambiente e per i Servizi Territoriali) is the national agency for environmental protection. ARPA (Agenzia Regionale per la Protezione dell'Ambiente) is the regional agency for environmental protection, for each of the 20 Italian regions. ATAT and ARPAs tightly collaborate in the so-called System of Agencies.

The Decree was published in the Official Gazette of the Italian Republic on August 28, 2003, and came into force on the same day.

Unofficial Translation by Paolo Vecchia

ANNEX A - DEFINITIONS

[Omissis]

ANNEX B

Table 1	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m ²)
Exposure limits			
0.1 < f = 3 MHz	60	0.20	-
3 < f = 3000 MHz	20	0.05	1
3 < f = 300 MHz	40	0.10	4

Table 2	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m ²)
Attention values			
0.1 MHz < f = 300 GHz	6	0.016	0.10 (3 MHz - 300 GHz)

Table 3	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m ²)
Quality goals			
0.1 MHz < f = 300 GHz	6	0.016	0.10 (3 MHz - 300 GHz)

ANNEX C – BRINGING TO COMPLIANCE

The reduction of electromagnetic field contributions from different sources that, at a given point, combine to exceed the exposure limits described in Art. 1, Clause 1, and the attention values described in Art. 3, Paragraph 2, shall be undertaken as follows. Where the electric field of the i -th source is given by E_i , where L_i is the corresponding limit given in tables of Annex B, where D_i is the power density of the source and D_{Li} the corresponding limit given in tables of Annex B, then the normalised contributions produced by the sources at that given point are determined by:

$$(1) \quad C_i = \frac{E_i^2}{L_i^2} \quad \text{or, for frequencies } f > 3 \text{ MHz} \quad C_i = \frac{D_i}{D_{Li}}$$

If the sum

$$(2) \quad C = \sum_i C_i$$

exceeds 1, then exposure limits are not complied with, and therefore one or more of the signals E_i must be reduced.

Preliminarily, by R_j are designated contributions C_j which individually exceed 1. To each corresponding signal, a reduction coefficient β_j shall be applied satisfying the equation

$$\beta_j^2 R_j = 0.8$$

from which we get:

$$\beta_j = \sqrt{\frac{0.8}{R_j}} = \sqrt{\frac{0.8 L_j^2}{E_j^2}} \quad \text{and} \quad E_{jR} = \beta_j E_j$$

If the sum

$$(3) \quad C = \sum_p C_p + \sum_j \frac{E_{jR}^2}{L_j^2} \quad \text{where } p + j = i$$

exceeds 1, signals E_i shall be reduced in such a way as $C = 0.8$, for the purpose of a greater protection of the public.

Contributions from signals are excluded where they contribute less than 1/100th of the total exposure, conventionally indicated as:

$$\sum_k A_k$$

Indicating $n + k = p$, Eqn. (3) can be written as:

$$(4) \quad C = \sum_n \frac{E_n^2}{L_n^2} + \sum_k A_k + \sum_j \frac{E_{jR}^2}{L_j^2}$$

By putting into Eqn. (4) the values:

$$C = 0.8 \quad E_{nR} = \alpha E_n \quad E_{jRR} = \alpha E_{jR}$$

where α is the reduction factor and E_{nR} and E_{jRR} are the new electric field values brought to compliance, we get:

$$(5) \quad 0.8 = \sum_n \frac{E_{nR}^2}{L_n^2} + \sum_k A_k + \sum_j \frac{E_{jRR}^2}{L_j^2} = \sum_n \frac{\alpha^2 E_n^2}{L_n^2} + \sum_k A_k + \sum_j \frac{\alpha^2 E_{jR}^2}{L_j^2}$$

and finally:

$$(6) \quad 0.8 - \sum_k A_k = \alpha^2 \left(\sum_n \frac{E_n^2}{L_n^2} + \sum_j \frac{E_{jR}^2}{L_j^2} \right)$$

$$(7) \quad \alpha = \sqrt{\frac{0.8 - \sum_k A_k}{\sum_n \frac{E_n^2}{L_n^2} + \sum_j \frac{E_{jR}^2}{L_j^2}}} = \sqrt{\frac{0.8 - \sum_k A_k}{\sum_n \frac{E_n^2}{L_n^2} + \sum_j \frac{\beta_j^2 E_j^2}{L_j^2}}}$$