

**Notification**  
**of the recast Ordinance on Electromagnetic Fields**  
**(*Verordnung über elektromagnetische Felder – 26. BImSchV*)**

**of 14 August 2013**

On the basis of Article 3 of the Ordinance of 14 August 2013 (Federal Law Gazette [BGBl.] Part I p. 3259), the wording of the Twenty-sixth Ordinance Implementing the Federal Immission Control Act (Ordinance on Electromagnetic Fields), in the version applicable from 22 August 2013 onwards, is herewith notified below.

The recast Ordinance takes the following into account:

1. the Ordinance of 16 December 1996 (Federal Law Gazette Part I p. 1966), which entered into force on 1 January 1997, and
2. Article 1 of the above Ordinance, which came into force on 22 August 2013.

Bonn, 14 August 2013

The Federal Minister  
for the Environment, Nature Conservation  
and Nuclear Safety

Peter Altmaier

**Twenty-sixth Ordinance Implementing  
the Federal Immission Control Act (Ordinance on Electromagnetic Fields)  
(*Sechszwanzigste Verordnung zur Durchführung des Bundes-  
Immissionsschutzgesetzes – Verordnung über elektromagnetische Felder –  
26. BImSchV*)**

Section 1

**Scope**

(1) This Ordinance shall apply to the erection and operation of high frequency installations, low frequency installations and direct current installations pursuant to subsection (2). It contains requirements for the protection of the public and the neighbourhood from harmful environmental impacts and for precautions against harmful environmental impacts from electric, magnetic and electromagnetic fields. The Ordinance does not take into account the effects of electric, magnetic and electromagnetic fields on electrically or electronically driven implants.

(2) For the purpose of this Ordinance:

1. High frequency installations:

shall mean stationary installations which generate electromagnetic fields in the frequency range from 9 kHz to 300 GHz, excepting installations which generate broadband electromagnetic impulses and serve the purposes of national defence,

2. Low frequency installations:

shall mean stationary installations for transformation and transmission of electricity with a rated voltage of 1,000 V or more, including traction power trunk lines and traction power overhead lines, and other comparable installations in the frequency range from 1 Hz to 9 kHz,

3. Direct current installations:

shall mean stationary installations for transmission, transformation and conversion, including the switch gear systems, of direct current with a rated voltage of 2,000 V or

more.

## Section 2

### **High frequency installations**

(1) In the interests of protection from harmful environmental impacts, high frequency installations with an equivalent isotropically radiated power (EIRP) of 10 watts or more shall be erected and operated in such a way that, within their sphere of influence, and in places which are intended for the long-term or temporary presence of humans, and when they are operating at maximum capacity,

1. the limit values specified in Annexes 1a and 1b for the relevant frequency range, taking account of immissions from other stationary high frequency installations as well as from low frequency installations pursuant to Annex 2, are not exceeded, and
2. in addition, the criteria stipulated in Annex 3 are adhered to in the case of pulsed electromagnetic fields.

The same shall apply to a high frequency installation with equivalent isotropically radiated power (EIRP) of fewer than 10 watts if it is erected at a location pursuant to section 2 no. 3 of the Ordinance on the Procedure for Providing Proof as Regards Limiting Exposure to Electromagnetic Fields (*Verordnung über das Nachweisverfahren zur Begrenzung elektromagnetischer Felder*) of 20 August 2002 (Federal Law Gazette Part I [BGBl.] p. 3366), most recently amended by Article 3 para. 20 of the Act of 7 July 2005 (Federal Law Gazette Part I p.1970), in the respectively applicable version, where the high frequency installations present there have an equivalent isotropically radiated power (EIRP) of 10 watts or more (total radiated power), or if they reach or exceed a total radiated power of 10 watts. Sentence 2 shall not apply to high frequency installations which have an equivalent isotropically radiated power (EIRP) of 100 milliwatts or less.

(2) Instances of briefly exceeding the limit values which are to be adhered to pursuant to subsection (1) sentence 1 no. 1, also in conjunction with subsection (1) sentence 2, because of a temporary risk to public safety and order, or to protect the security of the State, shall be disregarded.

### Section 3

#### **Low frequency installations**

(1) In the interests of protection from harmful environmental impacts, low frequency installations which were erected prior to 22 August 2013 shall be operated in such a way that, within their sphere of influence, and while they operate at maximum capacity, they do not exceed the limit values specified in Annex 1a for electric field strength and magnetic flux density in places intended for the non-temporary presence of humans, whilst low frequency installations with a frequency of 50 Hz may not exceed half the limit value specified in Annex 1a for magnetic flux density. The following shall be disregarded here unless there is sufficient indication in individual cases of nuisances caused in particular by contact voltage which the neighbourhood cannot reasonably be expected to tolerate from the point of view of their nature, scale or duration

1. instances of briefly exceeding the limit values pursuant to sentence 1 in conjunction with Annex 1a by no more than 100 percent, where the total duration of such instances does not exceed 5 percent of an assessment period of one day, and
2. cases where the electric field strength limit values specified in sentence 1 in conjunction with Annex 1a are exceeded by not more than 100 percent in a small area outside buildings.

(2) In the interests of protection from harmful environmental impacts, low frequency installations which are erected subsequent to 22 August 2013 shall be erected and operated in such a way that, while they operate at maximum capacity, they do not exceed the limit values specified in Annex 1a within their sphere of influence in places intended for the non-temporary presence of humans, whilst low frequency installations with a frequency of 50 Hz may not exceed half the magnetic flux density limit value specified in Annex 1a. This shall be without prejudice to existing licences and planning approval.

(3) All immissions shall be taken into account when calculating the electric field strength and the magnetic flux density pursuant to subsection (1) and subsection (2) which are produced pursuant to Annex 2a by other low frequency installations, as well as by stationary high frequency installations with frequencies between 9 kHz and 10 MHz which require a site certificate pursuant to sections 4 and 5 of the Ordinance on the Procedure for Providing Proof as Regards Limiting Exposure to Electromagnetic Fields.

(4) Impacts such as spark discharges, including between people and conductive objects, shall be avoided if they may lead to considerable nuisances or damage.

#### Section 3a

##### **Direct current installations**

In the interests of protection from harmful environmental impacts, direct current installations shall be erected and operated in such a way that, within their sphere of influence in places intended for the long-term or temporary presence of humans, and while they operate at maximum capacity,

1. the magnetic flux density limit value specified in Annex 1a is not exceeded, and
2. impacts such as spark discharges, including between people and conductive objects, are avoided if they may lead to considerable nuisances or damage.

All relevant immissions shall be considered thereby.

#### Section 4

##### **Precautionary requirements**

(1) In the interests of precaution, a major alteration of low frequency installations in the vicinity of dwellings, hospitals, schools, kindergartens, crèches, playgrounds or similar facilities may only be carried out if, in such buildings or on such land, the maximum effective values for electric field strength and magnetic flux density also satisfy the requirements pursuant to section 3 subsection (1) sentence 1, notwithstanding the provisions of section 3 subsection (1) sentence 2. The requirements to provide precautions from the Ordinance on Electromagnetic Fields (*Verordnung über elektromagnetische Felder*) in the version of 16 December 1996 shall continue to apply to low frequency installations which were erected or significantly altered subsequent to 16 December 1996.

(2) When erecting or significantly altering low frequency installations and direct current installations, the possibilities shall be exhausted to minimise the electric, magnetic and electromagnetic fields generated by the respective installation according to the state-of-the-art, taking account of circumstances within the sphere of influence. Details shall be regulated

by an administrative provision pursuant to section 48 of the Federal Immission Control Act (*Bundes-Immissionsschutzgesetz*).

(3) Low frequency installations for transmission of electricity with a frequency of 50 Hz and a rated voltage of 220 Kilovolt and more which are erected in a new path may not be erected over buildings or parts of buildings intended for the long-term presence of humans. Existing licences and planning approval, as well as planning approval and planning licence procedures applied for by 22 August 2013 for which a complete application had been made at that time, shall remain unaffected.

## Section 5

### **Determination of field strength and flux density values**

Measuring instruments, as well as measurement and calculation methods, used for determining electric and magnetic field strength and magnetic flux density, including taking account of existing immission levels, must correspond to the state-of-the-art of measurement and calculation technology. Where applicable, use shall be made of the measurement and calculation methods of DIN EN 50413 (August 2009 edition), which is obtainable from the publishers VDE-Verlag GmbH or Beuth Verlag GmbH, both based in Berlin, and which has been deposited with the German Patent and Trade Mark Office for safe keeping as an archive document. Measurements shall be performed at the places of influence relevant pursuant to sections 2, 3 or 3a which have the highest exposure. They shall not be required if compliance with the limit values can be established by calculation methods.

## Section 6

### **Further requirements**

These provisions shall be without prejudice to any further requirements resulting from other legal provisions, especially legal provisions relating to electromagnetic compatibility and telecommunications legislation.

Section 7  
**Notification**

(1) Where necessary in order to perform its tasks in the implementation of the present Ordinance, the competent authority shall be entitled to call up the data notified by operators of stationary radio installations which serve private or commercial purposes or are operated in the context of economic enterprises, pursuant to sections 9, 11 and 12 of the Ordinance on the Procedure for Providing Proof as Regards Limiting Exposure to Electromagnetic Fields, as well as the site certificates issued pursuant to section 5 of the above ordinance, including the application documents submitted pursuant to section 4 subsection (5) of the abovementioned ordinance, from the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway. The Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway shall provide the data pursuant to sentence 1 to the competent authority in electronic form at the latest one week after receipt.

(2) The operator of a low frequency installation with a rated voltage of 110 Kilovolt and more, or of a direct current installation, shall notify the competent authority thereof no later than two weeks prior to putting it into service or making major alterations if

1. the installation is situated in an undesignated outlying area on land covered by a building development plan or within a coherently built-up area, or on land containing residential buildings, or crosses such area or land, and
2. the installation or major alteration thereof does not require, under other legal provisions, a licence and planning approval or other official decision in the course of which immission control issues are taken into account.

In the case of power lines it shall be sufficient to make notification in respect of those sections of the power line which fulfil the conditions in accordance with sentence 1.

(3) When making notifications pursuant to subsection (2), the operator should state the relevant data for the installation and append a site plan to the notification. The operator of a low frequency installation with a rated voltage of less than 110 Kilovolt shall keep the relevant data available for the power line sections to which the prerequisites pursuant to subsection (2) sentence 1 nos. 1 and 2 apply, as well as a site plan, and shall submit them without delay to the competent authority on request.

## Section 7a

### **Participation by the local authorities**

The local authority in whose territory the high frequency installation is to be erected shall be consulted by the operators in the selection of locations for high frequency installations erected subsequent to 22 August 2013. It shall be afforded the opportunity in good time to make a statement and to discuss the construction measure. The outcome of the participation shall be taken into account.

## Section 8

### **Approval of exceptions**

(1) The competent authority may on application approve exceptions to the requirements of sections 2, 3 and 3a if no harmful environmental impacts are to be expected having regard to the special circumstances of the individual case, and especially to the nature and duration of the utilisation of the installation and the actual presence of persons in the sphere of influence of the installation.

(2) The competent authority may approve exceptions to the requirements of section 4 if the requirements set out in section 4 are disproportionate in the individual case.

## Section 9

### **Regulatory offences**

Whoever, within the meaning of section 62 subsection (1) no. 7 of the Federal Immission Control Act, deliberately or negligently

1. in contravention of section 2 sentence 1, also in conjunction with sentence 2, in contravention of section 3 subsection (1) sentence 1 or subsection (2) sentence 1 or in contravention of section 3a sentence 1, erects or operates an installation designated therein,
2. substantially alters a low frequency installation in contravention of section 4 subsection (1), or

3. makes no notification at all or an incorrect, incomplete or late notification, in contravention of section 7 subsection (2) sentence 1 or in contravention of section 10 subsection (2)

shall be deemed to have committed a regulatory offence.

#### Section 10

#### **Transitional provisions**

(1) Low frequency installations with a frequency of 16.7 Hz which were erected prior to 22 August 2013 shall be operated until 22 August 2018 in such a way that, within their sphere of influence, and when they are operating at maximum capacity, they do not exceed twice the electric field strength limit value specified in Annex 1a at locations which are intended for the non-temporary presence of humans.

(2) If direct current installations are already being operated on 22 August 2013, operation shall be notified pursuant to section 7 subsection (2) by 23 September 2013. If its erection had already been commenced prior to 22 August 2013, but if operation does not take place before 23 September 2013, the notification of the operation pursuant to section 7 subsection (2) shall take place within four weeks after putting it into service.

**Annex 1**

(to sections 2, 3, 3a and 10)

**Annex 1a**

Frequency (f) in Hz	Limit values	
	Electric field strength in Kilovolts per metre (kV/m) (effective)	Magnetic flux density in Microtesla (μT) (effective)
0	-	500
1 - 8	5	40,000/f <sup>2</sup>
8 - 25	5	5,000/f
25 - 50	5	200
50 - 400	250/f	200
400 - 3 000	250/f	80,000/f
3,000 - 10,000,000	0.083	27

**Annex 1b**

Frequency (f) in Megahertz (MHz)	Limit values, quadratically averaged over 6-minute intervals	
	Electric field strength in volts per metre (V/m) (effective)	Magnetic field strength in amperes per metre (A/m) (effective)
0.1 - 1	87	0.73/f
1 - 10	87/f <sup>1/2</sup>	0.73/f
10 - 400	28	0.073
400 - 2,000	1.375 f <sup>1/2</sup>	0.0037 f <sup>1/2</sup>
2,000 - 300,000	61	0.16

## Annex 2

(to sections 2 and 3)

Taking immission contributions of other installations into account

### Annex 2a

Immission contributions of the electric and magnetic fields of all low frequency installations and of high frequency installations with frequencies between 9 kHz and 10 MHz must satisfy the following conditions:

#### Electric fields:

$$\sum_{1\text{Hz}}^{10\text{MHz}} \frac{I_{E,i}}{G_{E,i}} \leq 1$$

where

$I_{E,i}$  = immission contribution of the electric field with frequency  $i$  ranging from 1 Hz to 10 MHz,  
 $G_{E,i}$  = limit value of electric field strength with frequency  $i$  ranging from 1 Hz to 10 MHz, pursuant to Annex 1a

#### Magnetic fields:

$$\sum_{1\text{Hz}}^{10\text{MHz}} \frac{I_{M,i}}{G_{M,i}} \leq 1$$

where

$I_{M,i}$  = immission contribution of the magnetic field with frequency  $i$  ranging from 1 Hz to 10 MHz,  
 $G_{M,i}$  = limit value of magnetic flux density with frequency  $i$  ranging from 1 Hz to 10 MHz, pursuant to Annex 1a in conjunction with section 3

### Annex 2b

Immission contributions of the electric and magnetic fields of high frequency installations with frequencies > 100 kHz must additionally satisfy the following conditions:

#### Electric fields:

$$\sum_{100\text{kHz}}^{300\text{GHz}} \left( \frac{I_{E,j}}{G_{E,j}} \right)^2 \leq 1$$

where

$I_{E,j}$  = immission contribution of the electric field with frequency  $j$  ranging from 100 kHz to 300 GHz (quadratically averaged over 6-minute intervals),  
 $G_{E,j}$  = limit value of electric field strength with frequency  $j$  in the frequency range from 100 kHz to 300 GHz (quadratically averaged over 6-minute intervals), pursuant to Annex 1b

#### Magnetic fields:

$$\sum_{100\text{kHz}}^{300\text{GHz}} \left( \frac{I_{M,j}}{G_{M,j}} \right)^2 \leq 1$$

where

$I_{M,j}$  = immission contribution of the magnetic field with frequency  $j$  ranging from 100 kHz to 300 GHz (quadratically averaged over 6-minute intervals),  
 $G_{M,j}$  = limit value of magnetic field strength with frequency  $j$  in the frequency range from 100 kHz to 300 GHz (quadratically averaged over 6-minute intervals), pursuant to Annex 1b.

### **Annex 3**

(to section 2)

#### **Pulsed fields of high frequency installations**

With pulsed electromagnetic fields in the frequency range from 9 kHz to 100 kHz, the peak value for electric and magnetic field strength may not exceed 1.5-times the values of Annex 1a.

With pulsed electromagnetic fields in the frequency range above 100 kHz to 10 MHz, the peak value for electric and magnetic field strength may not exceed  $6.93 f^{0.664}$ -times the values of Annex 1b (f in MHz).

With pulsed electromagnetic fields in the frequency range above 10 MHz to 300 GHz, the peak value for electric and magnetic field strength may not exceed 32-times the values of Annex 1b.