STATUTORY RULES OF NORTHERN IRELAND

2016 No. 266

HEALTH AND SAFETY

The Control of Electromagnetic Fields at Work Regulations (Northern Ireland) 2016

Made - - - -	*4th July 2016*
Coming into operation	*1st August 2016*

The Department for the Economy(**1**), being the Department concerned(**2**), makes the following Regulations in exercise of the powers conferred by Articles 17(1), (2) and (5)(**3**) and 55(2) of, and paragraphs 7, 8, 10, 12(2) and (3), 13, 15, 17 and 19 of Schedule 3 to the Health and Safety at Work (Northern Ireland) Order 1978(**4**) ("the 1978 Order").

The Regulations give effect to proposals submitted to it by the Health and Safety Executive for Northern Ireland under Article 13(1A)(**5**) of the 1978 Order after the Executive had carried out consultations in accordance with Article 46(3)(**6**).

PART 1

INTRODUCTION

Citation and commencement

1. These Regulations may be cited as the Control of Electromagnetic Fields at Work Regulations (Northern Ireland) 2016 and shall come into operation on 1st August 2016.

Interpretation

2.—(1) In these Regulations—

"AL" means an action level set out in Parts 2 and 3 of Schedule 1;

(**1**) Formerly the Department of Enterprise, Trade and Investment; *see*2016 c. 5, section 1(3); that Department was formerly the Department of Economic Development; *see*S.I. 1999/283 (N.I. 1), Article 3(5); that Department was formerly the Department of Manpower Services, *see*S.I. 1982/846 (N.I. 11), Article 3

(**2**) *See* Article 2(2) of S.I. 1978/1039 (N.I. 9)

(**3**) Article 17 shall be read with S.I. 1992/1728 (N.I. 17), Articles 3(2) and 4(2)

(**4**) S.I. 1978/1039 (N.I. 9): the general purposes of Part II referred to in Article 17(1) were extended by S.I. 1992/1728 (N.I. 17), Articles 3(1) and 4(1). Article 55(2) was amended by S.I. 1998/2795 (N.I. 18), Article 6(1) and Schedule 1, paragraph 19

(**5**) Article 13(1) was substituted by S.I. 1998/2795 (N.I. 18), Article 4

(**6**) Article 46(3) was amended by S.I. 1998/2795 (N.I. 18), Article 6(1) and Schedule 1, paragraphs 8 and 18 "designated area" means any area designated by Order under section 1(7) of the Continental Shelf Act 1964(**7**) and "within a designated area" includes over and under it;

"direct biophysical effect" means an effect on human body tissue caused by its presence in an electromagnetic field;

"electromagnetic field" means a static electric, static magnetic and time-varying electric, magnetic and electromagnetic field with a frequency of up to 300 GHz;

"ELV" means an exposure limit value set out in Part 2 of Schedule 1;

"employee at particular risk" means—

(a) an employee who has declared to his or her employer a condition which may lead to a higher susceptibility to the potential effects of exposure to electromagnetic fields; or

(b) an employee who works in close proximity to electro-explosive devices, explosive materials or flammable atmospheres;

"the Executive" means the Health and Safety Executive for Northern Ireland;

"health effect" means a direct biophysical effect which is potentially harmful to human health;

"indirect effect" means an effect, caused by the presence of an object or a substance in an electromagnetic field, which may present a safety or health hazard;

"sensory effect" means a direct biophysical effect involving a transient disturbance in sensory perception or a minor and temporary change in brain function; and

"territorial sea" means the territorial sea of the United Kingdom adjacent to Northern Ireland and "within the territorial sea" includes on, over and under it.

(2) In these Regulations a reference to employees is, in relation to an employer, to be treated as a reference to the employees of that employer while they are at work.

Application

3. These Regulations do not apply to the master or crew of a ship or to the employer of such persons in respect of the normal shipboard activities of a ship's crew which are carried out solely by the crew under the direction of the master, and for the purposes of this regulation "ship" includes every description of vessel used in navigation, other than a ship forming part of Her Majesty's Navy.

PART 2

EXPOSURE AND RISK

Limitation on exposure to electromagnetic fields

4.—(1) Subject to paragraphs (2) and (3), an employer shall ensure that employees are not exposed to electromagnetic field levels in excess of the ELVs.

(2) Exposure may exceed the sensory effect ELVs during work activities in respect of which the employer has taken the applicable safety measures set out in Schedule 1(**8**).

(3) Paragraph (1) does not apply in relation to—

(a) any activity in respect of which a suitable and sufficient exposure limitation system is in place, where that activity is carried out—

(**7**) 1964 c. 29; section 1 was amended by the Oil and Gas (Enterprise) Act 1982 (1982 c. 23), Schedule 3, paragraph 1 and by the Energy Act 2011 (c. 16), section 103

(**8**) See paragraph 6 of Part 1 of Schedule 1

(i) by a person acting in the capacity of a member of either Her Majesty's armed forces or a visiting force;

(ii) by any civilian working with such a person; or

(iii) on any premises or part of premises under the control of the Secretary of State for the purposes of the Ministry of Defence or the service authorities of a visiting force; or

(b) the development, testing, installation, use and maintenance of, or research related to, magnetic resonance imaging equipment for patients in the health sector, where—

(i) the exposure of employees to electromagnetic fields is as low as is reasonably practicable; and

(ii) employees are protected against any health effects and safety risks related to that exposure.

(4) In paragraph (2), "sensory effect ELVs" means the sensory effect ELVs set out in Part 2 of Schedule 1.

(5) In paragraph (3)(a)—

"Her Majesty's armed forces" means the regular forces and the reserve forces as defined in section 374 of the Armed Forces Act 2006(**9**);

"service authorities" and "visiting force" have the meaning given in section 12 of the Visiting Forces Act 1952(**10**).

Exposure assessment

5.—(1) The employer shall make a suitable and sufficient assessment of the levels of electromagnetic fields to which employees may be exposed.

(2) Where regulation 4(1) applies—

(a) the assessment shall demonstrate whether that regulation is complied with, if necessary through the use of calculations and measurements; and

(b) the employer may, in accordance with Schedule 1(**11**), assess exposure against the ALs in order to determine that specific ELVs are not exceeded.

(3) The assessment may take into account—

(a) emission information and other safety related data provided by the manufacturer or distributor of equipment;

(b) industry standards and guidelines;

(c) guidance produced by the European Commission; and

(d) guidance produced by the Executive.

(4) The employer shall review the assessment when—

(a) there is reason to suspect it is no longer valid; or

(b) there has been a significant change in the matters to which it relates,

and make such changes to it as are necessary to ensure it remains suitable and sufficient.

(**9**) 2006 c.52. The definition of "the reserve force" was amended by section 44 of the Defence Reform Act 2014 (c.20)
(**10**) 1952 c.67. The definition of "visiting force" was amended by paragraph 14 of Schedule 15 to the Criminal Justice Act 1988 (c.33)
(**11**) See paragraphs 3 and 4 of Part 1 of Schedule 1

Application of regulations 7 to 9

6.—(1) Regulation 7 does not apply—

(a) where the most recent exposure assessment under regulation 5 demonstrates compliance with regulation 4(1); or

(b) in relation to activities set out in regulation 4(3).

(2) Regulations 8 and 9 do not apply where—

(a) the most recent exposure assessment under regulation 5 demonstrates that employees are not exposed to electromagnetic field levels in excess of the ELVs;

(b) the indirect effect ALs are not exceeded; and

(c) there are no employees at particular risk.

(3) In paragraph (2)(b), "indirect effect ALs" means the Low ALs in Table AL1 and the ALs in Tables AL5 to AL7, in Schedule 1.

Action plan

7.—(1) The employer shall make and implement a suitable and sufficient action plan to ensure compliance with regulation 4(1).

(2) The action plan shall include consideration of, where relevant—

(a) other working methods that entail lower exposure to electromagnetic fields;

(b) replacement equipment designed to reduce the level of exposure;

(c) technical measures to reduce the emission of electromagnetic fields, including, where necessary, the use of interlocks, screening or similar health protection mechanisms;

(d) demarcation and access control measures;

(e) maintenance programmes for work equipment, workplaces and workstation systems;

(f) the design and layout of workplaces and workstations;

(g) limitations on the duration and intensity of exposure; and

(h) the availability of suitable personal protective equipment.

(3) Where, despite the measures taken under paragraph (1), the exposure of employees exceeds any ELV the employer shall, as soon as is reasonably practicable, identify and implement any changes to the action plan which are necessary to ensure compliance with regulation 4(1).

Risk assessment

8.—(1) The employer shall make a suitable and sufficient assessment of the risks to employees arising from their exposure to electromagnetic fields.

(2) The risk assessment shall include consideration of, where relevant—

(a) the ALs and ELVs;

(b) the frequency range, level, duration and type of exposure, including its distribution over the employee's body and the workplace;

(c) direct biophysical effects;

(d) replacement equipment designed to reduce the level of exposure;

(e) information obtained from any health surveillance or medical examinations provided under regulation 11;

(f) information provided by the manufacturer or distributor of equipment;

(g) multiple sources of exposure;

(h) simultaneous exposure to multiple frequency fields;

(i) indirect effects;

(j) any effects on employees at particular risk; and

(k) other health and safety related information.

(3) The risks referred to in paragraph (1) do not include the risk of effects—

(a) caused by contact with live conductors;

(b) caused by multiple and separate instances of exposure; or

(c) which continue to develop when exposure has ceased.

(4) The employer shall review the assessment when—

(a) there is reason to suspect it is no longer valid; or

(b) there has been a significant change in the matters to which it relates,

and make such changes to it as are necessary to ensure it remains suitable and sufficient.

Obligation to eliminate or reduce risks

9.—(1) The employer shall ensure that, so far as is reasonably practicable, the risks identified in the most recent risk assessment under regulation 8 are eliminated or reduced to a minimum.

(2) Measures taken under paragraph (1) shall—

(a) be based on the general principles of prevention set out in Schedule 1 to the Management of Health and Safety at Work Regulations (Northern Ireland) 2000(**12**); and

(b) take into account technical progress, the potential to restrict access to parts of the workplace, and the availability of measures to control the production of electromagnetic fields at source.

PART 3

MISCELLANEOUS

Information and training

10. The employer shall provide relevant information and training to any employees who are likely to be subjected to the risks identified in the most recent risk assessment under regulation 8, including in relation to—

(a) the measures taken under regulation 9;

(b) the concepts and values of the ALs and ELVs and the possible risks associated with them;

(c) the possible indirect effects of exposure;

(d) the results of the most recent exposure assessment under regulation 5;

(e) how to detect and report sensory and health effects;

(f) the circumstances in which employees are entitled to health surveillance and medical examinations under regulation 11;

(g) safe working practices; and

(**12**) S.R. 2000 No. 388, as amended by S.R. 2001 No. 348, S.R. 2003 No. 454, S.R. 2006 No. 255, S.R. 2011 No. 350 and S.R. 2015 No. 265; revoked in part by S.R. 2007 No. 291

(h) any additional measures taken in respect of employees at particular risk.

Health surveillance and medical examinations

11.—(1) The employer shall ensure that health surveillance and medical examinations are provided as appropriate to any employee who—

(a) is exposed to electromagnetic field levels in excess of the health effect ELVs; and

(b) reports experiencing a health effect to that employer.

(2) Any health surveillance or medical examinations shall be provided during any reasonable hours chosen by the employee.

(3) The employer shall keep a suitable record of any health surveillance and medical examinations provided.

(4) In paragraph (1)(a), "health effect ELVs" means the health effect ELVs set out in Part 2 of Schedule 1.

Records

12. An employer who employs five or more employees shall—

(a) record the significant findings of the most recent exposure assessment under regulation 5; and

(b) where required to make them, record—

(i) the most recent action plan under regulation 7; and

(ii) the significant findings of the most recent risk assessment under regulation 8.

Exemptions

13.—(1) The Executive may by a certificate in writing exempt employers from the requirements of regulations 4(1) and 7 in relation to one or more work activities.

(2) An exemption under paragraph (1) shall be limited in time and subject to the conditions that—

(a) the exposure of employees to electromagnetic fields is as low as is reasonably practicable; and

(b) employees are protected against any health effects and safety risks related to that exposure.

(3) The Executive may amend or revoke an exemption at any time by a further certificate in writing.

Application within the territorial sea or a designated area

14. Within the territorial sea or a designated area these Regulations shall apply only to and in relation to the premises and activities to which any of paragraphs 2 to 9 of Schedule 2 apply.

Sealed with the Official Seal of the Department for the Economy on 4th July 2016.

Jackie Kerr
A senior officer of the Department for the Economy

SCHEDULE 1 Regulations 2, 4, 5, 6 and 11

TABLES OF ACTION LEVELS AND EXPOSURE LIMIT VALUES

PART 1

INTRODUCTION TO PARTS 2 AND 3

1. In this Schedule—

"contact current (I_C)" is the current created when a person comes into contact with an object in an electromagnetic field, expressed in ampères (A);

"external electric field strength (E)" is a vector quantity corresponding to the force exerted on a charged particle in the environment, irrespective of its motion in space, expressed in volts per metre (Vm^{-1});

"internal electric field strength (E)" is a vector quantity corresponding to the force exerted on a charged particle inside the human body, irrespective of its motion in space, expressed in volts per metre (Vm^{-1});

"limb current (I_L)" is the current induced in the limbs of a person exposed to electromagnetic fields in the frequency range from 10 MHz to 110 MHz, expressed in ampères (A);

"magnetic flux density (B)" is a vector quantity resulting in a force that acts on moving charges, expressed in tesla (T);

"power density (S)" is the radiant power incident perpendicular to a surface, divided by the area of the surface, expressed in watts per square metre (Wm^{-2});

"specific energy absorption (SA)" is the energy absorbed per unit mass of biological tissue, expressed in joules per kilogram (Jkg^{-1});

"specific energy absorption rate (SAR)" is the rate at which energy is absorbed per unit mass of body tissue, expressed in watts per kilogram (Wkg^{-1}).

2. The ALs and ELVs are set out in tables and grouped according to their potential effects, being —

(a) thermal effects, related to the heating of tissue due to its absorption of electromagnetic fields; and

(b) non-thermal effects, related to the stimulation of nerves or sensory organs due to the presence of electromagnetic fields.

3. The Low ALs in Table AL1 of Part 2, and the ALs in Part 3, specify the electromagnetic field levels above which specific indirect effects may occur.

4. The remaining ALs in Part 2 are defined physical quantities related to the direct biophysical effects of exposure to electromagnetic fields. Employers may, as part of their exposure assessment, assess electromagnetic field levels against these ALs. Each AL table states which ELV or ELVs will be complied with if electromagnetic field levels at a particular frequency do not exceed that AL. Exposures to electromagnetic field levels in excess of the AL may still be below the relevant ELV but the employer will have to undertake further assessment to determine this under regulation 5.

5. Except where otherwise indicated—

(a) "f" is the frequency expressed in hertz;

(b) the ALs and ELVs relate to exposure in any part of the body; and

(c) notes to the tables apply only to the table under which they appear.

6. The applicable safety measures referred to in regulation 4(2) are those required by the notes to the table or tables containing the sensory effect ELV which is to be exceeded, being—

(a) the note to Table ELV1; and

(b) note 2 to Tables ELV3 and ELV5.

PART 2

DIRECT BIOPHYSICAL EFFECTS OF EXPOSURE

Action Levels – non-thermal effects

Table AL1 - ALs for exposure to electromagnetic fields from 1 Hz to 10 MHz

Frequency range	*External electric field strength Low ALs (E) [Vm^{-1}]*	*External electric field strength High ALs (E) [Vm^{-1}]*
$1 \leq f < 25$ Hz	2.0×10^4	2.0×10^4
$25 \leq f < 50$ Hz	$5.0 \times 10^5/f$	2.0×10^4
50 Hz $\leq f <$ 1.64 kHz	$5.0 \times 10^5/f$	$1.0 \times 10^6/f$
$1.64 \leq f < 3$ kHz	$5.0 \times 10^5/f$	6.1×10^2
3 kHz $\leq f \leq$ 10 MHz	1.7×10^2	6.1×10^2
Exposure levels not exceeding the ALs will be compliant with:	Tables ELV2 and ELV3	

Notes

1. Between the Low and High ALs, exposure will be below the ELVs but spark discharges may occur. These can be prevented through the provision of information and training under regulation 10 and the use of suitable technical and personal protection measures.

2. The ALs in Tables AL1 and AL2 are root mean square (RMS) values of the field strength. These RMS values are equal to the peak values divided by √2 for sinusoidal fields. The corresponding ELVs in Tables ELV2 and ELV3 are peak values in time, which are equal to the RMS values multiplied by √2 for sinusoidal fields. In the case of non-sinusoidal fields the exposure assessment under regulation 5 shall be based on the weighted peak method (filtering in time domain) or on a scientifically proven and validated exposure evaluation procedure which produces comparable results to the weighted peak method.

3. The ALs represent the maximum field values at any place where an employee may be working, before the entry of any person into the field. In the case of an electromagnetic field source in the immediate vicinity of the body, compliance with the ELVs shall be determined dosimetrically, case by case.

Table AL2 - ALs for exposure to electromagnetic fields from 1 Hz to 10 MHz

Frequency range	*Magnetic flux density Low ALs (B) [μT]*	*Magnetic flux density High ALs (B) [μT]*	*Magnetic flux density ALs for exposure of limbs to a localised magnetic field (B) [μT]*
$1 \leq f < 8$ Hz	$2.0 \times 10^5/f^2$	$3.0 \times 10^5/f$	$9.0 \times 10^5/f$
$8 \leq f < 25$ Hz	$2.5 \times 10^4/f$	$3.0 \times 10^5/f$	$9.0 \times 10^5/f$
$25 \leq f < 300$ Hz	1.0×10^3	$3.0 \times 10^5/f$	$9.0 \times 10^5/f$
300 Hz $\leq f <$ 3 kHz	$3.0 \times 10^5/f$	$3.0 \times 10^5/f$	$9.0 \times 10^5/f$
3 kHz $\leq f \leq$ 10 MHz	1.0×10^2	1.0×10^2	3.0×10^2
Exposure levels not exceeding the ALs will be compliant with:	At and below 400 Hz: the sensory effect ELVs in Table ELV3	The health effect ELVs in Table ELV2	
	Above 400 Hz: the health effect ELVs in Table ELV2		

Notes

1. Between the Low and High ALs for exposure up to 400 Hz, exposure in the head of the employee will be below the health effect ELVs but may exceed the sensory effect ELVs in Table ELV3.
2. Notes 2 and 3 to Table AL1 apply.

Action Levels – thermal effects

Table AL3 - ALs for exposure to electromagnetic fields from 100 kHz to 300 GHz

Frequency Range	*External electric field strength ALs (E) [Vm^{-1}]*	*Magnetic flux density ALs (B) [μT]*	*Power density AL (S) [Wm^{-2}]*
100 kHz $\leq f <$ 1 MHz	6.1×10^2	$2.0 \times 10^6/f$	
$1 \leq f < 10$ MHz	$6.1 \times 10^8/f$	$2.0 \times 10^6/f$	
$10 \leq f < 400$ MHz	61	0.2	
400 MHz $\leq f <$ 2 GHz	$3 \times 10^{-3} f^{1/2}$	$1.0 \times 10^{-5} f^{1/2}$	
$2 \leq f < 6$ GHz	1.4×10^2	4.5×10^{-1}	
$6 \leq f \leq 300$ GHz	1.4×10^2	4.5×10^{-1}	50
Exposure levels not exceeding the ALs will be compliant with:	Up to 6 GHz: the health effect ELVs in Table ELV4 6 – 300 GHz: the health effect ELV in Table ELV6		The health effect ELV in Table ELV6

Notes

1. The electric field strength and magnetic flux densityALs are root mean square values.

2. For radiofrequency pulses, the peak power density averaged over the pulse width shall not exceed 1000 times the respective AL (S) value. For multi-frequency fields, the analysis shall be based on summation.

3. Note 3 to Table AL1 applies in relation to the ALs for external electric field strength and magnetic flux density.

4. The power density is the maximum level averaged over any $20cm^2$ of exposed area. Spatial maximum power densities averaged over $1cm^2$ shall not exceed 20 times the value of 50 Wm^{-2}.

5. From 6 to 10 GHz, power density shall be averaged over a six minute period. Above 10 GHz, it shall be averaged over a $68/f^{1.05}$-minute period (where “f” is the frequency in GHz).

Table AL4 – AL for exposure to electromagnetic fields from 10 to 110MHz

Frequency range	**Limb current AL (I_L) [mA]**
$10 \leq f \leq 110$ MHz	100
Exposure levels not exceeding the ALs will be compliant with:	The health effect ELV in Table ELV4 - localised SAR in the limbs

Note

. The AL is a root mean square value.

Exposure Limit Values – non-thermal effects

Table ELV1 - ELVs for exposure to electromagnetic fields from 0 to 1 Hz

	Sensory effect ELVs – magnetic flux density (B_0) [T]
Head and trunk	2
Limbs	8
	Health effect ELV – magnetic flux density (B_0) [T]
Any part of the body	8

Note

. The sensory effect ELVs may be exceeded during an employee’s shift where the employer ensures that—

(a) they are only exceeded temporarily;

(b) protection measures have been adopted which minimise, so far as is reasonably practicable, the sensory effects related to movement in static magnetic fields, including nausea and vertigo;

(c) adequate information is provided to the employee on the possibility of those sensory effects; and

(d) where any of those sensory effects are reported to the employer, the exposure assessment under regulation 5, and the protection measures, are updated where necessary.

Table ELV2 - Health effect ELVs for exposure to electromagnetic fields from 1 Hz to 10 MHz

Frequency range	*Health effect ELVs – internal electric field strength (E) [Vm^{-1}]*
1 Hz ≤ f < 3 kHz	1.1
3 kHz ≤ f ≤ 10 MHz	3.8×10^{-4} f

Notes

1. The ELVs are limits for electric fields induced in the body from exposure to time-varying electric and magnetic fields.

2. The ELVs are spatial peak values in the entire body of the employee.

3. Note 2 to Table AL1 applies in relation to methods of determining exposure.

Table ELV3 - Sensory effect ELVs for exposure to electromagnetic fields from 1 to 400 Hz

Frequency range	*Sensory effect ELVs – internal electric field strength in the head (E) [Vm^{-1}]*
1 ≤ f < 10 Hz	0.7/f
10 ≤ f < 25 Hz	0.07
25 ≤ f ≤ 400 Hz	0.0028 f

Notes

1. The ELVs are spatial peak values induced in the head of the exposed employee, and can arise from exposure to either external electric or external magnetic fields.

2. The ELVs may be exceeded during an employee's shift where the employer ensures that—

(a) they are only exceeded temporarily;

(b) hazardous spark discharges, and contact currents in excess of those in Table AL5, are prevented through the provision of information and training under regulation 10 and the use of suitable technical and personal protection measures;

(c) adequate information is provided to the employee on the possibility of sensory effects related to time-varying magnetic fields, including retinal phosphenes; and

(d) where any of those sensory effects are reported to the employer, the risk assessment is updated where necessary.

3. Note 2 to Table AL1 applies in relation to methods of determining exposure.

Exposure Limit Values – thermal effects

Table ELV4 – Health effect ELVs for exposure to electromagnetic fields from 100 kHz to 6 GHz

Area of exposure	*Health effect ELVs – specific energy absorption rate (SAR) [Wkg^{-1}]*
Whole body	0.4 (averaged SAR in the body)
Head and trunk	10 (localised SAR in the head and trunk)
Limbs	20 (localised SAR in the limbs)

Notes

1. The ELVs correspond to the SAR values averaged over a six minute period.

2. Localised SAR in the body and limbs can be assessed by either computational dosimetry or physical measurement of 10 grams of tissue. For computational dosimetry, 10 grams of contiguous tissue with approximately homogeneous electrical properties shall be used for the SAR average. For direct physical measurements a simple geometry, such as cubic or spherical tissue mass, may be used. The maximum value obtained shall be assessed against the ELVs.

Table ELV5 - Sensory effect ELV for exposure to electromagnetic fields from 300 MHz to 6 GHz

Frequency range	*Sensory effect ELV – specific energy absorption in the head (SA) [$mJkg^{-1}$]*
300 MHz $\leq$ f $\leq$ 6 GHz	10

Notes

1. When determining SA, energy absorption shall be averaged over 10 grams of tissue.
2. The ELV may be exceeded during an employee's shift where the employer ensures that—
   (a) it is only exceeded temporarily;
   (b) adequate information is provided to the employee on the possibility of sensory effects related to pulsed microwave radiation, including auditory sensations; and
   (c) where any of those sensory effects are reported to the employer, the risk assessment is updated where necessary.

Table ELV6 - Health effect ELV for exposure to electromagnetic fields from 6 to 300 GHz

Frequency range	*Health effect ELV – power density (S) [Wm^{-2}]*
6 GHz $\leq$ f $\leq$ 300 GHz	50

Notes

1. The power density is the maximum level averaged over any $20cm^2$ of exposed area. Spatial maximum power densities averaged over $1cm^2$ shall not exceed 20 times the value of 50 Wm^{-2}.

2. From 6 to 10 GHz, power density shall be averaged over a six minute period. Above 10 GHz, it shall be averaged over a $68/f^{1.05}$-minute period (where "f" is the frequency in GHz).

PART 3

INDIRECT EFFECTS OF EXPOSURE

Action Levels – non-thermal effects

Table AL5 - ALs for contact currents

Frequency of electromagnetic field in which an object is present	*Contact current ALs (I_C) [mA]*
up to 2.5 kHz	1.0
2.5 ≤ f < 100 kHz	0.4 f
100 ≤ f ≤10,000 kHz	40

Notes

1. "f" is the frequency expressed in kHz.
2. The ALs are root mean square values.
3. The ALs represent the maximum steady state current created during a continuous contact with an object in an electromagnetic field.

Table AL6 - ALs for static magnetic fields

Potential indirect effect	*Magnetic flux density ALs (B_0) [mT]*
Interference with active implanted medical devices	0.5
Attraction and projectile risk in the fringe field of high field strength sources (> 100 mT)	3

Note

. The AL for interference with active implanted medical devices represents the maximum field value at any place where an employee may be working.

Action Levels – thermal effects

Table AL7 - AL for contact currents

Frequency of electromagnetic field in which an object is present	*Contact current ALs (I_C) [mA]*
100 kHz ≤ f < 110 MHz	40

Notes

1. The AL is a root mean square value.

2. The AL represents the maximum steady state current created during a continuous contact with an object in an electromagnetic field.

SCHEDULE 2 Regulation 14

PREMISES AND ACTIVITIES WITHIN THE TERRITORIAL SEA OR A DESIGNATED AREA

Interpretation

1.—(1) In this Schedule—

"activity" includes a diving project and standing a vessel by;

"diving project" has the meaning assigned to it by regulation 2(1) of the Diving at Work Regulations (Northern Ireland) 2005(**13**) save that it includes an activity in which a person takes part as a diver wearing an atmospheric pressure suit and without breathing in air or other gas at a pressure greater than atmospheric pressure;

"offshore installation" shall be construed in accordance with paragraph 2(2) and (3);

"supplementary unit" means a fixed or floating structure, other than a vessel, for providing energy, information or substances to an offshore installation;

"vessel" includes a hovercraft and any floating structure which is capable of being navigated.

(2) For the purposes of this Schedule, any structures and devices on top of a well shall be treated as forming part of the well.

(3) Any reference in this Schedule to premises and activities includes a reference to any person, article or substance on those premises or engaged in, or, as the case may be, used or for use in connection with any such activity, but does not include a reference to an aircraft which is airborne.

Offshore installations

2.—(1) This paragraph shall apply within the territorial sea or a designated area to and in relation to—

(a) any offshore installation and any activity on it;

(b) any activity in connection with, or any activity immediately preparatory to an activity in connection with, an offshore installation, whether carried on from the installation itself, in or from a vessel or in any manner, other than an activity falling within sub-paragraph (4);

(c) a diving project involving—

(i) the survey and preparation of the sea bed for an offshore installation;

(ii) the survey and restoration of the sea bed consequent on the removal of an offshore installation.

(2) Subject to sub-paragraph (3), in this Schedule, "offshore installation" means a structure which is, or is to be, or has been, used while standing or stationed in water, or on the foreshore or other land intermittently covered with water—

(a) for the exploitation, or exploration with a view to exploitation, of mineral resources by means of a well;

(b) for undertaking activities falling within paragraph 6(2);

(**13**) S.R. 2005 No. 45, as amended by S.R. 2007 No. 247

(c) for the conveyance of things by means of a pipe;

(d) for undertaking activities that involve mechanically entering the pressure containment boundary of a well; or

(e) primarily for the provision of accommodation for persons who work on or from a structure falling within any of the provisions of heads (a) to (d),

together with any supplementary unit which is ordinarily connected to it, and all the connections.

(3) Any reference in sub-paragraph (2) to a structure or supplementary unit does not include—

(a) a structure which is connected with dry land by a permanent structure providing access at all times and for all purposes;

(b) a well;

(c) a mobile structure which has been taken out of use and is not yet being moved with a view to its being used for any of the purposes specified in sub-paragraph (2);

(d) any part of a pipeline; and

(e) a structure falling within paragraph 8(c).

(4) Subject to sub-paragraph (5), the following activities fall within this paragraph—

(a) transporting, towing or navigating an installation;

(b) any of the following activities carried on in or from a vessel—

(i) giving assistance in the event of an emergency;

(ii) training in relation to the giving of assistance in the event of an emergency;

(iii) testing equipment for use in giving assistance in the event of an emergency;

(iv) putting or maintaining a vessel on stand-by ready for an activity referred to in any of sub-heads (i) to (iii).

(5) Sub-paragraph (4)(b) does not apply in respect of a vessel in or from which an activity is carried on in connection with, or any activity that is immediately preparatory to an activity in connection with, an offshore installation other than an activity falling within sub-paragraph 4(b).

Wells

3.—(1) Subject to sub-paragraph (2), this paragraph applies within the territorial sea or a designated area to and in relation to—

(a) a well and any activity in connection with it; and

(b) an activity which is immediately preparatory to any activity in head (a).

(2) Sub-paragraph (1) includes keeping a vessel on station for the purpose of working on a well but otherwise does not include navigation or an activity connected with navigation.

Pipelines

4.—(1) This paragraph applies within the territorial sea or a designated area to and in relation to—

(a) any pipeline;

(b) any pipeline works;

(c) the following activities in connection with pipeline works—

(i) the loading, unloading, fuelling or provisioning of a vessel;

(ii) the loading, unloading, fuelling, repair and maintenance of an aircraft on a vessel,

being in either case a vessel which is engaged in pipeline works; or

(iii) the moving, supporting, laying or retrieving of anchors attached to a pipe-laying vessel including the supervision of those activities and giving of instruction in connection with them.

(2) In this paragraph—

"pipeline" means a pipe or system of pipes for the conveyance of any thing, together with—

(a) any apparatus for inducing or facilitating the flow of any thing through, or through part of, the pipe or system;

(b) any apparatus for treating or cooling any thing which is to flow through, or through part of, the pipe or system;

(c) valves, valve chambers and similar works which are annexed to, or incorporated in the course of, the pipe or system;

(d) apparatus for supplying energy for the operation of any such apparatus or works as are mentioned in heads (a) to (c);

(e) apparatus for the transmission of information for the operation of the pipe or system;

(f) apparatus for the cathodic protection of the pipe or system; and

(g) a structure used or to be used solely for the support of a part of the pipe or system;

but not including a pipeline of which no initial or terminal point is situated in the United Kingdom, within the territorial sea adjacent to the United Kingdom, or within a designated area;

"pipeline works" means—

(a) assembling or placing a pipeline or length of pipeline including the provision of internal or external protection for it;

(b) inspecting, testing, maintaining, adjusting, repairing, altering or renewing a pipeline or length of pipeline;

(c) changing the position of or dismantling or removing a pipeline or length of pipeline;

(d) opening the bed of the sea for the purposes of the works mentioned in heads (a) to (c), and tunnelling or boring for those purposes;

(e) any activities incidental to the activities described in heads (a) to (d);

(f) a diving project in connection with any of the works mentioned in heads (a) to (e) or for the purpose of determining whether a place is suitable as part of the site of a proposed pipeline and the carrying out of surveying operations for settling the route of a proposed pipeline.

Mines

5.—(1) This paragraph applies to and in relation to a mine within the territorial sea, and any activity in connection with it, while it is being worked.

(2) In this paragraph "mine" has the same meaning as in the Mines Act (Northern Ireland) 1969(**14**).

Gas Importation and Storage

6.—(1) Subject to sub-paragraph (3), this paragraph applies within the territorial sea to and in relation to any activities connected with or immediately preparatory to the activities set out in sub-paragraph (2).

(**14**) 1969 c. 6 (N.I.)

(2) The activities are—

(a) the unloading of gas to an installation or pipeline;

(b) the storage of gas, whether temporary or permanent, in or under the shore or bed of any water;

(c) the conversion of any natural feature for the purpose of storing gas, whether temporarily or permanently;

(d) the recovery of gas stored;

(e) exploration with a view to, or in connection with, the carrying on of activities within heads (a) to (d).

(3) Sub-paragraph (1) does not apply to an activity falling within sub-paragraph (2) if the provisions of this Schedule apply to or in relation to that activity by virtue of paragraph 2(1).

(4) In this paragraph—

"gas" means any substance which is gaseous at a temperature of 15°C and a pressure of 101.325 kPa (1013.25 mb); and

"installation" includes any floating structure or device maintained on a station by whatever means.

(5) For the purposes of sub-paragraphs (2) and (4), references to gas include any substance which consists wholly or mainly of gas.

Production of Energy from Water or Wind

7.—(1) This paragraph applies within the territorial sea to and in relation to any energy structure or activities connected with or preparatory to—

(a) the exploitation of those areas for the production of energy from water or wind,

(b) the exploration of such areas with a view to, or in connection with, the production of energy from water or wind, or

(c) the operation of a cable for transmitting electricity from an energy structure.

(2) In this paragraph "energy structure" means a fixed or floating structure or machine, other than a vessel, which is, or is to be, or has been, used for producing energy from water or wind.

Underground Coal Gasification

8. This paragraph applies within the territorial sea or a designated area to and in relation to—

(a) underground coal gasification and any activity in connection with it;

(b) any activity which is immediately preparatory to any activity in sub-paragraph (a); and

(c) any fixed or floating structure which is, or is to be, or has been, used in connection with the carrying on of activities within sub-paragraphs (a) and (b).

Other activities

9.—(1) Subject to sub-paragraph (2), this paragraph applies within the territorial sea to and in relation to—

(a) the construction, reconstruction, alteration, repair, maintenance, cleaning, use, operation, demolition and dismantling of any building, or other structure, not being in any case a vessel, or any preparation for any such activity;

(b) the transfer of people or goods between a vessel or aircraft and a structure (including a building) mentioned in head (a);

(c) the loading, unloading, fuelling or provisioning of a vessel;

(d) a diving project;

(e) the laying, installation, inspection, maintenance, operation, recovery or repair of a cable;

(f) the construction, reconstruction, finishing, refitting, repair, maintenance, cleaning or breaking up of a vessel except when carried out by the master or any officer or member of the crew of that vessel;

(g) the maintaining on a station of a vessel which would be an offshore installation were it not a structure to which paragraph 2(3)(c) applies;

(h) the transfer of people or goods between a vessel or aircraft and a structure mentioned in head (g).

(2) This paragraph does not apply—

(a) to a case where paragraph 2, 3, 4, 5, 6, 7 or 8 applies; or

(b) to vessels which are registered outside the United Kingdom and are on passage through the territorial sea.

EXPLANATORY NOTE

(This note is not part of the Regulations)

1. These Regulations implement, as respects Northern Ireland, Directive 2013/35/EU of the European Parliament and of the Council (OJ No L 179, 29.6.2013, p1-21) on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (20th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) and repealing Directive 2004/40/EC.

2. Part 2 sets out the main duties placed on employers under the Regulations. Part 3 sets out supplementary duties and gives the Health and Safety Executive for Northern Ireland ("the Executive") limited powers to exempt employers from specific duties. Schedule 1 provides more specific details on how employers are to comply with their duties.

3. The main duties and provisions in Parts 2 and 3 of these Regulations are as follows—

(a) all employers must ensure that, except in circumstances prescribed by the Regulations or where permitted under an exemption issued by the Executive, employees are not exposed to electromagnetic field levels in excess of the prescribed exposure limits *(regulation 4(1))*. These limits are contained in Part 2 of Schedule 1;

(b) all employers must assess the levels of electromagnetic fields to which their employees may be exposed *(regulation 5(1))*;

(c) all employers must, except in the circumstances prescribed by regulation 6—

(i) make and implement an action plan to reduce exposure levels *(regulation 7(1))*; and

(ii) assess the risks posed to employees by their exposure to electromagnetic fields *(regulation 8(1))*;

(d) where employers are required to assess the risks of exposure to electromagnetic fields, they must—

(i) ensure that any risks identified in that assessment are eliminated or reduced to a minimum *(regulation 9(1))*; and

(ii) provide information and training to employees likely to be subjected to the risks identified in that assessment *(regulation 10)*;

(e) all employers must, in the circumstances prescribed by regulation 11(1), ensure that health surveillance and medical examinations are provided as appropriate;

(f) the Executive may exempt employers from having to comply with the exposure limits in respect of one or more work activities *(regulation 13(1))*. An exemption must be limited in time and subject to prescribed safety conditions.

4. In Great Britain the corresponding Regulations are the Control of Electromagnetic Fields at Work Regulations 2016 (S.I. 2016/588). The Great Britain Health and Safety Executive has prepared a full impact assessment in relation to those Regulations. A copy of that assessment together with a Northern Ireland supplement prepared by the Health and Safety Executive for Northern Ireland is held at the offices of that Executive at 83 Ladas Drive, Belfast, BT6 9FR, from where a copy may be obtained on request. A copy of the transposition note in relation to the implementation of the Directive can also be obtained from the same address. Copies of both of these documents are annexed to the Explanatory Memorandum which is available alongside these Regulations at www.legislation.gov.uk.

5. A person who contravenes the Regulations is guilty of an offence under Article 31 of the Health and Safety at Work (Northern Ireland) Order 1978 and is liable—

(a) on summary conviction to imprisonment for a term not exceeding six months, or a fine not exceeding £20,000, or both; or

(b) on conviction on indictment to imprisonment for a term not exceeding two years, or a fine, or both.