

 <h2 style="text-align: center;">Electromagnetic Fields (EMF) Protection</h2>			
Country #1	Russian Federation		
EMF protection #2	Yes		
Instrument type #3	Law	Standards (GOSTs)	Sanitary-epidemiological regulations and norms (SanPiNs)
Instrument coverage #4	National	National	National
Title of Instrument #5			
a.	Federal law "The sanitary-epidemiological welfare of the population" from March 30th, 1999 no. 52-FZ	GOST 12.1.002-84 Occupational safety standards system. Power frequency electric fields. Permissible levels of field strength and requirements for control at work-places	SanPiN 2.2.4.1191-03 Electromagnetic fields in occupational environment
b.		GOST 12.1.006-84 Occupational safety standards system. Electromagnetic fields of radio frequencies. Permissible levels at work-places and requirements for control	SanPiN 2.1.8/2.2.4.1190-03 Hygienic requirements for terrestrial mobile radiocommunication facilities allocation and operation
c.		GOST 12.1.045-84 Occupational safety standards system. Electrostatic fields. Tolerance levels and methods of control at working places	SanPiN 2.2.4.1329-03 Requirements for personal protection from pulsed electromagnetic fields exposure
d.			SanPiN 2.1.8/2.2.4.1383-03 Hygienic requirements for transmitting radiotechnical facilities allocation and operation
			Sanitary norms and regulations for population protection from electric field

e.			exposure produced by power frequency alternating current overhead transmission lines # 2971-84
f.			MSanPiN 001-96 Sanitary norms of permissible levels for physical factors during use of domestic articles
g.			SanPiN 2.1.2.1002-00 Sanitary-epidemiological requirements for living buildings and locations
h.			SanPiN 2.2.2/2.4.1340-03 Hygienic requirements for personal computers and labor organization
Issued by whom? #6	Russian Parliament, signed by the President	State Committee for Standardization (GOST)	Ministry of Public Health
Issued when? #7	March 30th, 1999	a. 1984	a. 2003
			b. 2003
		b. 1984	c. 2003
			d. 2003
			e. 1984
		c. 1984	f. 1996
			g. 2000
			h. 2003
Is there a revision pending? #8	No	No	No
Are the limits based on ICNIRP? #9	No	No	No
Compliance #10	Mandatory	Mandatory	Mandatory
If mandatory - how is compliance verified? #11	Federal and local Centres of Sanitary-Epidemiological Surveillance with specially equipped laboratories, supervised by the Department of Sanitary-Epidemiological Surveillance of Ministry of Public Health, make measurements and estimate the control results		
Group protected #12	a. Public and occupational	a. b. c. Occupational	a. b. c. d. g. Occupational
			b. c. e. f. g. h. Public
		a. 50 Hz	a. 0 Hz, 50 Hz, 10 kHz – 300 GHz
			b. 27– 2400 MHz

Frequency range covered #13	N/A	b. 60 kHz - 300 GHz	c. 30 kHz – 300 GHz
			d. Ultrawideband pulses
		c. 0 Hz	e. 50 Hz
			f. 0 Hz, 50 Hz, 0,3 kHz – 300 GHz
			g. 0 Hz, 50 Hz, 30 kHz – 300 GHz
h. 0 Hz, 5 Hz – 400 kHz			
Quantities #14	N/A	Basic restriction, maximum permissible levels (ceiling limit)	Basic restriction (a. b. c.), ceiling limits and reference levels (a. b. c. d. e. f. g. h.)
Basic restriction quantities #15	N/A	Energy loading values: $E^2 \cdot T$ [(V/m) ² ·h] $H^2 \cdot T$ [(A/m) ² ·h] $S \cdot T$ [μ W/cm ² ·h]	Energy loading values (occupational exposure): $E^2 \cdot T$ [(V/m) ² ·h] $H^2 \cdot T$ [(A/m) ² ·h] $S \cdot T$ [μ W/cm ² ·h]
SAR details #16	N/A	No SAR, other dosimetric parameters (see #15)	No SAR, other dosimetric parameters (see #15)
a. averaging time	N/A	N/A	N/A
b. averaging mass		N/A	N/A
c. measurement method		N/A	N/A
Reference level quantities #17	N/A	RMS electric field strength [V/m]; RMS magnetic field strength [A/m]; mean power flux density [μ W/cm ²]	RMS and peak electric field strength [V/m]; RMS and peak magnetic field strength [A/m] or RMS and peak magnetic flux density [μ T], mean power flux density [μ W/cm ²]
Measurement method for reference level quantities #18	N/A	Measurement methods included	Measurement methods included
Multiple frequency exposure #19	N/A	Yes	Yes
			Only for pulse modulated 50

Pulsed field exposure #20	N/A	No (peak MPL are not defined)	Hz magnetic field and ultrawideband EM pulses MPL are defined
Contact details #21	Russian National Committee for Non-Ionizing Radiation Protection, Zhivopisnaya Str. 46, Moscow, 123182, Russia http://www.pole.com.ru/ , E-mail: RNK@pole.com.ru		
	Centre for Electromagnetic Safety, Zhivopisnaya Str. 46, Moscow, 123182, Russia http://www.tesla.ru/ , E-mail: CEMS@tesla.ru		
Request for limit data #22	See table below		
EMF handbook for general public #23	<ol style="list-style-type: none"> 1. Title: Human being in the middle of electromagnetic fields 2. Publisher: Centre for Electromagnetic Safety, RF SRC– Institute of Biophysics 3. Publishing Year: 1998 4. Number of Pages: 12 5. Basis on WHO handbook?: No 6. Language: Russian 7. Contact for free copies/Internet link: CEMS@tesla.ru 		

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*Last Updated on 15-Nov-2003
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Basic Restrictions and Reference Levels

REFERENCE LEVELS FOR STATIC ELECTRIC AND MAGNETIC FIELDS						
Exposure category	E-field strength (kV/m)	E-field, ceiling (kV/m)	B-field (mT)	B-field, ceiling (mT)	B-field, pacemakers (mT)	Geomagnetic field attenuation (μT/μT)
<u>Occupational</u>	$60 \cdot T^{-1/2}$	60	10* (15**)	30 (50**)	–	2
<u>General public</u>	15	15	–	–	–	–

* The work day limit (8 hours). The time limitation for static magnetic field between 10 (15**) and 30 (50**) mT is the following: from 61 up to 480 min for 10 (15**) mT, from 11 up to 60 min for 20 (30**) mT and from 0 up to 10 min for 30 (50**) mT

** The limit for localized exposure (arms, hands)

BASIC RESTRICTIONS FOR TIME VARYING

ELECTRIC AND MAGNETIC FIELDS UP TO 300 GHz

Exposure category	Frequency range	Current density for head and trunk (mA/m ²)	SAR (W/kg)	Power density (W/m ²)	$W_E = E^2 \cdot T$ [(V/m) ² ·h]	$W_H = H^2 \cdot T$ [(A/m) ² ·h]	$W_S = S \cdot T$ [mW/cm ² ·h]
<u>Occupational</u>	0.03– 3 MHz	N/A	N/A	N/A	20,000	200	
	3– 30 MHz				7,000	–	
	30– 50 MHz				800	0.72	
	50– 300 MHz				800	–	
	0.3– 300 GHz						200
<u>General public</u>							

* For rotating and scanning antennas 10 times higher values of the W_S are allowed.

** For localized exposure (hands) 12.5 times higher values of the W_S are allowed.

*** On the basis of the energy loading limits the maximal permissible times (in hours) of exposure are being calculated, as follows:

$$T_{\max} = \frac{W_E}{E^2}$$

$$T_{\max} = \frac{W_H}{H^2}$$

$$T_{\max} = \frac{W_S}{S}$$

REFERENCE LEVELS FOR TIME VARYING ELECTRIC AND MAGNETIC FIELDS UP TO 300 GHz

(unperturbed values)

Exposure category	Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (mT)	Equivalent plane wave power density (W/m ²)
	50 Hz	$50,000 \cdot (T+2)^{-1}$ (25,000 ^a)	80 ^b . (1,600 ^a)	0,1 ^b . (2 ^a)	
	50 Hz		1,400/3,400/5,400 ^{b.c} . (6,000/8,000/10,000 ^{a.c})		
	10– 30 kHz	500 ^b . (1,000 ^a)	50 ^b . (100 ^a)		
	0.03– 3 MHz	$(20,000/T)^{\frac{1}{2}}$	$(200/T)^{\frac{1}{2}}$		

		(500 ^{a.})	(50 ^{a.})		
<u>Occupational</u>	3– 30 MHz	(7,000/T) ^{1/2} (296 ^{a.})			
	30– 50 MHz	(800/T) ^{1/2} (80 ^{a.})	(0.72/T) ^{1/2} (3 ^{a.})		
	50– 300 MHz	(800/T) ^{1/2} (80 ^{a.})			
	0.3– 300GHz				2·T ⁻¹ (10 ^{a.} (50 ^{d.}))
	Ultrawideband EM pulses	2,000– 7,000 depending on pulse type ^{e.}			
	<u>General public</u>	50 Hz	500 (1,000 ^{f.})		0.01 (0.05 ^{f.})
(0.3) 30– 300 kHz		25			
0.3– 3 MHz		15			
3– 30 MHz		10			
30– 300 MHz		3g.			
0.3– 300 GHz					0.10 (0.25 ^{h.})
Ultrawideband EM pulses		700– 2,300 depending on pulse type ^{e.}			
Mobile terminal users	27– 30 MHz	45 ^{i.}			
	30– 300 MHz	15 ^{i.}			
	300– 2400 MHz				1 ^{i.}
VDU users workplaces	5– 2000 Hz	25		0.000250	
	2– 400 kHz	2.5		0.000025	
a. The ceiling limit					
b. The work day limit (8 hours)					
c. Peak values for pulse modulated 50 Hz magnetic field. Mode 1: pulse duration PD ≥ 0.02 s, pause between pulses TP ≤ 2 s / Mode 2: 60 s ≥ PD ≥ 1 s, TP > 2 s / Mode 3: 0.02 s ≤ PD < 1 s, TP > 2 s					
d. The ceiling limit for localized exposure (hands and legs)					
e. Peak values for pulsed EMF with pulse front duration from 0.1 to 50 ns and pulse duration from 1 to 1000 ns					
f. Living areas outside buildings					
g. MPL for radio and TV transmitters in frequency ranges 48,5– 108 MHz and 174– 230 MHz is calculated as E _{MPL} = 21·f ^{0.37} [V/m], f in MHz; MPL for special purposes long range radars working in 150– 300 MHz frequency range is 6 V/m in the near field region and 19 V/m in the far field region					

h. For rotating and scanning antennas		
i. Near user's head		
* Assessment of simultaneous exposure to different sources (more than one in the same place) of EMR or both to electric and magnetic fields is determined by the following relations:		
$\sum_{i=1}^n \frac{W_{E_i}}{W_{E_{lim,i}}} \leq 1$	$\sum_{i=1}^n \frac{W_{H_i}}{W_{H_{lim,i}}} \leq 1$	$\frac{W_E}{W_{E_{lim}}} + \frac{W_H}{W_{H_{lim}}} \leq 1$
where $W_{E,i}$; $W_{H,i}$; W_E , W_H are the measured dosimetric values; $W_{E_{lim,i}}$, $W_{H_{lim,i}}$ are the limits for dosimetric values for the corresponding frequency ranges.		
** Exposure assessment of microwaves in case of multidirectional exposure is determined by summing the dosimetric values of the separate exposures.		
REFERENCE LEVELS FOR INSTANTANEOUS CONTACT CURRENTS		
FROM POINT CONTACT WITH CONDUCTIVE OBJECTS		
Exposure category	Frequency range	Maximum contact current (mA RMS)
Occupational		No
General public		No
REFERENCE LEVELS FOR TIME AVERAGED CURRENT INDUCED IN ANY LIMB		
Exposure category	Frequency range	Current (mA rms)
Occupational		No
General public		No

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