

	<b>Electromagnetic Fields (EMF) Protection</b>	
Country #1	<b>United Kingdom</b>	
EMF protection #2	Yes	
Instrument type #3	Guideline, but used to establish compliance with law	Voluntary Guideline for mobile telephone network operators (Additional precaution)
Instrument coverage #4	National	National
Title of Instrument #5		
a.	Board Statement on Restrictions on Human Exposure to Static and Time Varying Electromagnetic Fields and Radiation	European Council Recommendation 519/1999
b.	Documents of the NRPB, Vol 4, Nr 5, 1993	
Issued by whom? #6	NRPB, but used by Health & Safety Inspectors when assessing compliance with general legal duties of care.	Other - Voluntary agreement
Issued when? #7	1993	2000
Is there a revision pending? #8	Yes. Revised advice from NRPB is expected early in 2004.	No
Are the limits based on ICNIRP? #9	Current advice is not. NRPB Proposed that the UK should adopt the 1998 ICNIRP guidelines in a May 2003 Consultation Document.	Yes
	Mandatory for occupational exposures and exposures of the public arising from occupational activities. Legal duties are to	

Compliance #10	control risks. If Guidelines are followed, Government Agencies (e.g. Health & Safety Inspectors) accept that (EMF) risks are controlled adequately.	Voluntary
If mandatory - how is compliance verified? #11	HM Inspectors of Health & Safety either as part of routine inspection; responding to complaints or investigating accidents.	By declaration and independent random audit (see <a href="http://www.radio.gov.uk/">http://www.radio.gov.uk/</a> )
Group protected #12	Public and occupational	Public (mobile phone installations only)
Frequency range covered #13	0 kHz-300 GHz	Recommendation covers all frequencies, but only applied to 900 MHz; 1800 MHz bands at present.
Quantities #14	Basic restrictions and Reference (Investigation - derived) levels	Basic restrictions and Reference levels in technical annex to Recommendation
Basic restriction quantities #15	Magnetic flux density; induced current density; SAR; PFD	
SAR details #16		
a. averaging time	15 mins (6 mins)	
b. averaging mass	Whole body (head & foetus -10g; neck & trunk - 100g; limbs - 100g)	
c. measurement method	Not specified	
Reference level quantities #17	Investigation levels: E, H, B, PFD, contact current	
Measurement method for reference level quantities #18	Not specified	
Multiple frequency	Included (additional Guidance in NRPB -R301)	

exposure #19	
Pulsed field exposure #20	Yes, but at 2.45 GHz only
Contact details #21	National Radiological Protection Board, Chilton, Oxon. OX11 0RQ. <a href="http://www.nrpb.org/">http://www.nrpb.org/</a>
Request for limit data #22	
EMF handbook for general public #23	There is currently no handbook published by the relevant institution (Dept. of Health; NRPB). One video by NRPB has been issued (" <a href="#">Mobile Telephony and Health</a> ")

[Europe](#) [World](#)

Last Updated on 12-Nov-2003  
By D Simunic & S Bullock

## Basic Restrictions and Reference Levels

BASIC RESTRICTIONS FOR STATIC ELECTRIC AND MAGNETIC FIELDS						
Exposure category	E-field strength (kV/m)	B-field (mT)	B-field (mT)	B-field (mT)		
		head, neck and trunk	head, neck & trunk	limbs		
<u>Occupational</u>	25	200 (24 hour average)	2000 (instant)	5000 (instant)		
<u>General public</u>	25	200 (24 hour average)	2000 (instant)	5000 (instant)		
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 <sup>2</sup> )	Whole-body average SAR (W/kg)	Spatial peak SAR in the head & trunk (W/kg)	Spatial peak SAR in limbs (W/kg)	Power density (W/m <sup>2</sup> )
<u>Occupational</u>	1Hz - 10 Hz	100/f (f in Hz)				
	10 Hz - 1 kHz	10				
	1 kHz - 100 kHz	f/100 (f in kHz)				
	100 kHz - 10 MHz	f/100 (f in kHz)	0.4	10	20	

	10 MHz - 10 GHz		0.4	10	20	
	10 GHz - 300 GHz					100
<u>General public</u>	1Hz - 10 Hz	100/f (f in Hz)				
	10 Hz - 1 kHz	10				
	1 kHz - 100 kHz	f/100 (f in kHz)				
	100 kHz - 10 MHz	f/100 (f in kHz)	0.4	10	20	
	10 MHz - 10 GHz		0.4	10	20	
	10 GHz - 300 GHz					100

### REFERENCE (Investigation) LEVELS FOR TIME VARYING

#### ELECTRIC AND MAGNETIC FIELDS UP TO 300 GHz

(unperturbed RMS values)

Exposure category	Frequency range	E-field strength (kV/m)	H-field strength (A/m)	B-field (mT)	Equivalent plane wave power density (W/m <sup>2</sup> )
<u>Occupational</u>	<0.4 Hz	25	160000	200	
	0.4 - 24 Hz	25	64000/f (f in Hz)	80/f (f in Hz)	
	24 Hz - 600 Hz	600/f (f in Hz)	64000/f (f in Hz)	80/f (f in Hz)	
	600 Hz - 1 kHz	1	64000/f (f in Hz)	80/f (f in Hz)	
	1kHz - 535 kHz	1	64	0.08	
	535 kHz - 600 kHz	1	18/f <sup>2</sup> (f in MHz)	0.023/f <sup>2</sup> (f in MHz)	
	600 kHz - 12 MHz	600/f (f in kHz)	18/f <sup>2</sup> (f in MHz)	0.023/f <sup>2</sup> (f in MHz)	
	12 MHz - 200 MHz	0.05	0.13	0.00016	6.6
	200 MHz - 400 MHz	0.25f (f in GHz)	0.66f (f in GHz)	0.00079f (f in GHz)	165f <sup>2</sup> (f in GHz)
	400 MHz - 800 MHz	0.1	0.26	0.00031	26
	800 MHz - 1.55 GHz	0.125f	0.33f (f in GHz)	0.00040f (f in GHz)	41f <sup>2</sup> (f in GHz)
	1.55 GHz - 300 GHz	0.194	0.52	0.00062	100
<u>General public</u>	<0.4 Hz	25	160000	200	
	0.4 - 24 Hz	25	64000/f (f in Hz)	80/f (f in Hz)	
	24 Hz - 600 Hz	600/f (f in Hz)	64000/f (f in Hz)	80/f (f in Hz)	
	600 Hz - 1 kHz	1	64000/f (f in Hz)	80/f (f in Hz)	
	1kHz - 535 kHz	1	64	0.08	

	535 kHz - 600 kHz	1	$18/f^2$ (f in MHz)	$0.023/f^2$ (f in MHz)	
	600 kHz - 12 MHz	$600/f$ (f in kHz)	$18/f^2$ (f in MHz)	$0.023/f^2$ (f in MHz)	
	12 MHz - 200 MHz	0.05	0.13	0.00016	6.6
	200 MHz - 400 MHz	$0.25f$ (f in GHz)	$0.66f$ (f in GHz)	$0.00079f$ (f in GHz)	$165f^2$ (f in GHz)
	400 MHz - 800 MHz	0.1	0.26	0.00031	26
	800 MHz - 1.55 GHz	$0.125f$	$0.33f$ (f in GHz)	$0.00040f$ (f in GHz)	$41f^2$ (f in GHz)
	1.55 GHz - 300 GHz	0.194	0.52	0.00062	100
# For populations excluding small children, the following modified investigation levels may be used					
<b>Adults</b>	600 kHz - 10 MHz	$600/f$ (f in kHz)			
	10 MHz - 60 MHz	0.06			10
	60 MHz - 137 MHz	$f$ (f in GHz)			$2700f^2$ (f in GHz)
	137 MHz - 1.1 GHz	0.137			50
	1.1 GHz - 1.55 GHz	$0.125f$			$41f^2$ (f in GHz)
<b>REFERENCE LEVELS FOR INSTANTANEOUS CONTACT CURRENTS</b>					
<b>FROM POINT CONTACT WITH CONDUCTIVE OBJECTS</b>					
<b>Exposure category</b>	<b>Frequency range</b>		<b>Maximum contact current (mA rms)</b>		
Occupational	0.1 Hz - 370 Hz		0.5		
	370 Hz - 70 kHz		$f^{0.7}$		
	70 kHz - 100 MHz		20		
General public	0.1 Hz - 370 Hz		0.5		
	370 Hz - 70 kHz		$f^{0.7}$		
	70 kHz - 100 MHz		20		

[Europe](#) [World](#)

*Last Updated on 12-Nov-2003  
By D Simunic & S Bullock*

