Health Protection Agency

Reference Levels for UK Amateur Radio Bands

This is a summary of the NRPB guidance on exposure to electromagnetic fields as applicable to those frequencies authorised for use by amateur radio stations in the UK, as referred to in the booklet Amateur Radio Licence Terms, Provisions and Limitations (BR68) originally issued by the Radiocommunications Agency.

The Board of NRPB has recommended the adoption of the guidelines of the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Underlying this guidance are basic restrictions on exposure, based on energy absorption rate and induced currents in the body. The appropriate reference levels for general public exposure shown below are a set of field strengths and power density values below which the basic restrictions on exposure will not be exceeded. These reference levels are not limits on exposure, but compliance with them will ensure compliance with the basic restrictions. Exceeding them does not necessarily mean that the basic restrictions have been exceeded. However, it does mean that the exposure situation should be investigated further to assess compliance with basic restrictions.

Band	Frequency	Electric field strength ($V\ m^{-1}$)	Magnetic field strength ($A\ m^{-1}$)	Power density ($W\ m^{-2}$)
LF	135.7-137.8 KHz	87	5	-
160 m	1.810-2.000 MHz	63	0.38	-
80 m	3.500-3.800 MHz	46	0.20	-
40 m	7.000-7.100 MHz	33	0.10	-
30 m	10.100-10.150 MHz	28	0.073	2
20 m	14.000-14.350 MHz	28	0.073	2
17 m	18.068-18.168 MHz	28	0.073	2
15 m	21.000-21.450 MHz	28	0.073	2
12 m	24.890-24.990 MHz	28	0.073	2
10 m	28.000-29.700 MHz	28	0.073	2
6 m	50.00-52.00 MHz	28	0.073	2
4 m	70.00-70.50 MHz	28	0.073	2
2 m	144-146 MHz	28	0.073	2
70 cm	430-440 MHz	29	0.077	2.2
23 cm	1240-1325 MHz	50	0.133	6.5
13 cm and above	2310-2450 MHz and all higher bands	61	0.16	10

Notes

Where values are frequency dependent, the mid-band value is used. The differences due to frequency variation within a band are negligible.

More detailed information is available in the publication Advice on limiting exposure to electromagnetic fields (0-300 GHz) (*Documents of the NRPB*, **15** (2) (2004).

There is a reference level of 20 mA for contact current (current flowing through a person when a metallic object is touched) for the frequency range 100 KHz-110 MHz.

As the basic restrictions on exposure above 100 KHz are time-averaged, exposures should also be time-averaged when comparing them with the reference levels. For frequencies below 10 GHz, the exposure (expressed as a power

density) should be averaged over a six-minute period. For field strengths, values should be squared and the averaging applied to the result.

For amateur bands above 10 GHz, the averaging time should be reduced according to the formula $68/f^{1.05}$ minutes, where f is the frequency in GHz. For example, the averaging time for 24 GHz is 2.4 minutes, and 1.2 minutes for 47 GHz.

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