



Recent scientific publications relevant to mobile telephony

March 2015

Details

Australia: Simple closed-form formulae to estimate near fields in living tissue layers due to dipole antenna exposure, [Kurniawan et al., IEEE Transactions on Dielectrics and Electrical Insulation](#), 22(1):619-625, February 2015.

'...The root mean square error in using the analytical formulae is less than 16.5% for considered scenarios, where we represent tissue layers with dielectric layers...'

Belgium: Assessing whole-body absorption cross section for diffuse exposure from reverberation chamber measurements, [Bamba et al., IEEE Transactions on Electromagnetic Compatibility](#), 57(1):27-34, February 2015.

'...Applied to a real human at 1800 MHz resulting in a whole-body absorption cross section of 0.95m², 1.01 m², and 1.11 m² for a sitting, standing, and standing with stretched arms posture, respectively...'

Canada: EMI risk assessment in a hospital ward with one and two roaming wireless transmitters, [Ardavan et al., IEEE Transactions on Electromagnetic Compatibility](#), 57(1):69-79, Feb 2015.

'...It is shown that with some non-compliance the risk of exceeding immunity becomes constant with increasing MSD [minimum separation distance], and so specifying a larger MSD does not necessarily increase safety...'

China: Circadian rhythmicity of antioxidant markers in rats exposed to 1.8 GHz radiofrequency fields, [Cao et al., International Journal of Environmental Research and Public Health](#), 12(2):2071-2087, Published: 12 February 2015.

'...Overall results indicate that there may be adverse effects of RF exposure on antioxidant function, in terms of both the daily antioxidative levels, as well as the circadian rhythmicity...'

China: Comparison of the genotoxic effects induced by 50 Hz extremely low-frequency electromagnetic fields and 1800 MHz radiofrequency electromagnetic fields in GC-2 cells, [Duan et al., Radiation Research](#), 183(3):305-314, March 2015.

'...Both ELF-EMF and RF-EMF under the same experimental conditions may produce genotoxicity at relative high intensities, but they create different patterns of DNA damage. Therefore, the potential mechanisms underlying the genotoxicity of different frequency electromagnetic fields may be different...'

Spain: Assessment of Wi-Fi radiation in indoor environments characterizing the time & space-varying electromagnetic fields, [Pachón-García et al., Measurement](#), 63(0):309-321, March 2015.

'...Oscillations up to 10 dB were detected for exactly the same position, depending on whether Web-browsing or P2P traffic was being sent. Differences around 62 dB in mean values between the different rooms of the house were found. All values are below the threshold of 61 V/m that standards set (at least 12 times below it)...'

Spain: Outdoor characterization of radio frequency electromagnetic fields in a Spanish birth cohort, [Calvente et al., *Environmental Research*](#), 138(0):136-143, April 2015.

'...Incident field strength levels varied widely among different areas or towns/villages, demonstrating spatial variability in the distribution of exposure values related to the surface area population size and also among seasons. Although recorded values were well below International Commission for Non-Ionizing Radiation Protection reference levels, there is a particular need to characterize incident field strength levels...'

Sweden: Implications of EMF exposure limits on output power levels for 5G devices above 6 GHz, [Colombi et al., *IEEE Antennas and Wireless Propagation Letters*](#), 04 February 2015.

'...Existing exposure limits will lead to a non-physical discontinuity of several dB in Pmax as the transition is made from SAR to power density based basic restrictions. As a consequence, to be compliant with applicable exposure limits at frequencies above 6 GHz, Pmax might have to be several dB below the power levels used for current cellular technologies...'

Switzerland: Inter-individual and intra-individual variation of the effects of pulsed RF EMF exposure on the human sleep EEG, [Lustenberger et al., *Bioelectromagnetics*](#), Published online: 17 FEB 2015.

'...We did not observe reproducible within-subject RF EMF effects on sleep spindle and delta-theta activity in the sleep EEG and it remains unclear whether a biological trait of how the subjects' brains react to RF EMF exists...'

Turkey: A large-scale measurement, analysis and modelling of electromagnetic radiation levels in the vicinity of GSM/UMTS base stations in an urban area, [Karadağ et al., *Radiation Protection Dosimetry*](#), Published online: February 17, 2015.

'...Over 15 000 instant and 13 000 000 continuous measurements were taken throughout the process. The authors have found that the normal electric field radiation can increase ~25 % during daytime, depending on mobile communication traffic...'

USA: IEEE committee on man and radiation—COMAR technical information statement radiofrequency safety and utility smart meters, [Bushberg et al., *Health Physics*](#), 108(3):388-391, March 2015.

'...Low peak power of Smart Meters and the very low duty cycles lead to the fact that accessible RF fields near Smart Meters are far below both U.S. and international RF safety limits whether judged on the basis of instantaneous peak power densities or time-averaged exposures. This conclusion holds for Smart Meters alone or installed in large banks of meters...'

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The GSM Association (GSMA) is the global trade association that exists to promote, protect and enhance the interests of GSM mobile operators throughout the world. www.gsma.com/mobile-and-health

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