



Non-Ionizing Radiation & Children's Health

International Joint Workshop
18 - 20 May 2011, Ljubljana, Slovenia

POSTER

PLATFORM PRESENTATION

Exposure To Electromagnetic Fields From Wireless Computer Networks: Duty Factors Of Wi-Fi Devices Operating In Schools

Mohammed KHALID, Terry MEE, Azadeh PEYMAN, Carolina CALDERON, Darren Addison, Myron MASLANYJ and Simon MANN

Physical Dosimetry Department/Health Protection Agency, Didcot, UK

School measurements have been carried out with Wi-Fi devices used in the UK schools to evaluate the proportion of time the devices transmitted during classroom lessons. Data traffic capturing and packet counting equipment was used to determine the cumulative transmission times of the individual Wi-Fi devices used in the classroom environment. The radiofrequency (RF) exposure from Wi-Fi devices depends on transmitted power during bursts, proportion of time that the devices transmit and the energy absorption in the body per unit emitted power. Wi-Fi devices transmit signals in bursts with no transmissions between bursts. Transmitted bursts were captured to determine the proportion of time Wi-Fi devices transmitted while children were using their laptops as part of their lessons. Investigations revealed that differing radio conditions resulted in a number of effects influencing the proportion of RF transmission times and the corresponding time-averaged radiated powers. However, children used their Wi-Fi devices mostly for receiving traffic from access points and therefore laptop transmit times were low. Duty factors of the monitored laptops were consistently below 1% and those of access points were below 10%. Based on burst power densities (0.4 to 18 mWm⁻²) previously measured, the time averaged power density values for laptops and those for access points were much lower than the ICNIRP guidelines (10 Wm⁻²).

References:

Peyman A, Khalid M, Calderon C, Addison D, Mee T, Maslanyj M and Mann S, 2011, Assessment of Exposure to Electromagnetic Fields from Wireless Computer Networks (Wi-Fi) in Schools; Results of Laboratory Measurements, Health Physics (in press).

Findlay R and Dimbylow P J. SAR in a child voxel phantom from exposure to wireless computer networks (Wi-Fi). Phys. Med. Biol. 55: N405–N411; 2010.

ICNIRP Statement on the "Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). Health Physics 97(3):257-259; 2009.