

In the case of a complex analysis of the determination of the electromagnetic emission

produced by a wireless transmission equipment within a local network, several situations and variables have to be considered, such as: number of workstations (connected users); type of information transmitted (data, video); the distance to the access point and the distance from the working point; position on wireless equipment; traffic direction (upload or download); transfer rate etc.

Practical experiments to determine exposure to electromagnetic emission from wireless data transmission devices have shown that increasing the data transfer rate does not necessarily require an increase in the field strength, and the intensity of the magnetic field may be influenced by the conditions of conveyance and data transfer (upload or download) [6].

4. Conclusion

The fast and strong development of wireless telecommunication and data transmission devices in the past few years and further growth prospects have posed a lot of technical problems but also the nature of studying the effects of the prelingate or accidental exposure of human beings to electromagnetic emission.

Interdisciplinary studies and researches have shown that prolonged exposure to electromagnetic radiation emitted by wireless devices can cause thermal effects (increase of temperature) on the human body but also non-thermal effects.

In the study, analysis and measurement of the electromagnetic field parameters emitted by a wireless device used for data transfer (internet connection) many theoretical and practical aspects have to be taken into account, taking into account many parameters that can influence the measured values that can be remembered: number of workstations; type of information transmitted (data, video); the distance to the access point and the distance from the working point; position on wireless equipment; traffic direction (upload or download); transfer rate etc.

This paper presented the results of the measurements made for an AC750 Dual Band, 750 Mbps, 2.4 GHz router frequently used to connect to the Internet in houses, offices.

The measurements were made in the specialized laboratory of ICMET Craiova and special

equipment (precision dipole antenna PCD-8250, Anritsu Spectrum Master MS 2711D) was used.

In this first stage, the measurements targeted the simplest situation, namely the router connected to the internet but not transferring data.

The results obtained and presented in fig. 5 and table 1 showed for this situation small and non-hazardous values of the electromagnetic field sizes.

The studies, comparative analyses and future measurements will take into account several operational parameters and situations presented in the article, which may influence the exposure to electromagnetic emission, issued by wireless devices (routers) on the human body

References:

- [1] Stănciulescu, I., Riscul biologic al expunerii la radiații electromagnetice ale sistemelor de comunicații mobile, in *Univers ingineresc*, anul XXVIII, No.6(628), March, 2017
- [2] www. Seibersdorf-laboratories at/of.
- [3] www. us.anritsu.com.
- [4] www.compeg.com.au/field-strength-calculator
- [5] * * * INCNIRP Guideline –For limiting exposure to time – varying electric, magnetic and electromagnetic fields, www icnirp.org/cms
- [6] Bechet, P., Aplicații ale sistemelor automatizate pentru monitorizarea în timp real a câmpului electromagnetic, *Teza de abilitare*, Universitatea Tehnică Cluj-Napoca, 2016
- [7] Bechet, P., Miclauș, S., Spectrum Analyzer Ability to Accurately Assess Electromagnetic Exposure due to Wireless Communications Signals in the Environment: an Analysis, in *PIERS Proceedings*, Marrakesh, Morocco, March 20-23, 2011, pp.438-442