The Occupational EMF Exposure Directive 2013/35/EU; an interactive workshop for discussion of implementation and compliance issues

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This abstract is for the Discussion Workshop. It addresses the European Directive on workers' exposure to electromagnetic fields (2013/35/EU) which will be being implemented at the time of the BioEM2016 meeting. It addresses the implementation, and standardisation frameworks that have been developed around the Directive as well as some of its practical implications and consequences. The intention is for interested people to be able to discuss these issues in conjunction with a number of short scene-setting presentations from the authors and others.

The roots of the EMF Directive(1) go back to the early 1990s, when it was a component of a wider Physical Agents Directive that also covered noise, vibration and optical radiation.

In 2004 the first version of the Directive emerged as a stand-alone document covering just EMF and based quite closely on the 1998 ICNIRP guidelines for occupational EMF exposure(2) The final version was published in 2013, with an implementation date (by which it should be incorporated in law in all 28 nations of the EU) of June 2016. This differed from the first version in several ways, including having two sets of low frequency limits based on CNS and on peripheral stimulation effects, and by incorporating specific derogations for military operations and for MRI. The Non-binding Guide to the 2004 Directive also has been updated, and this will be presented at the workshop.

In recent years some attempts have been made in order to support employers in their duty to assess exposure conditions at the work places of their employees. Apart from documents such as the above discussed Guide, software-based expert systems were developed in some member countries. Below two examples of such systems are shortly discussed. The WISE tool for the evaluation of electromagnetic field exposure in industrial environments is provided by the University of Ghent. The tool can be uploaded from a website [3]. Before using the tool for the first time, the registration of the user is required. This process encompasses provision of the name and affiliation of the user. Basically two versions of the system are available, the Exposure Edition (IWEC Tool) and the Expert Edition (WHIPP). The Indoor Wireless Exposure Calculator (IWEC) allows calculating indoor wireless exposure. A graphical user interface is provided to the user allowing him to design a floorplan and an accesspoint (see Figure 1). After placing accesspoints in the scenario, exposure distribution can be shown on the graphical user interface. In addition the WHIPP (Wireless & Cable Heuristic Indoor Propagation Prediction) tool is available. The solution allows predicting wireless coverage in a work environment for a set of access points.

A different approach to assess exposure was developed in Austria. In order to assist employers in their duty of evaluating workplace conditions, the specifically designed platform EMES was sponsored by the AUVA and jointly developed by AIT and AUVA. Multiple types of exposure sources are included the EMES (Electromagnetic Fields Evaluation System) data repository. So far, the focus is set on offices as well as carpenter workshop environments. In order to provide data on electromagnetic sources for the EMES repository, it is necessary to assess the electromagnetic field decay via standardized measurement or calculation procedures. This body of information can be used to evaluate exposure at work places, the contribution of different electromagnetic sources can be combined by selecting specific sources and their distances to the worker. EMES is very efficient in term of time consumption and requires a crowd of experts supporting the development of the database. EMES can be downloaded from the Web [4] without any registration. In addition, a specific interface is provided in order to provide electromagnetic data of new sources by registered data providers. After validation by an administrator such data can be uploaded and used for further evaluations. Moreover, standards, guidelines and other documents including exposure limits can be uploaded by the administrator, too. The user of EMES can therefore select between different limit sets before to evaluate exposure conditions at a specific workplace (see Figure 2, a preliminary English version of EMES is available, too).

In summary: this workshop will provide participants with an opportunity to discuss the legislative background to the EMF Directive, the standards that have been developed to allow its implementation (and how these may impact on employers and equipment suppliers) and the assessment and information framework that has been put in place to support it, including tools/systems and other measures supporting implementation as well as any other unresolved aspects of implementation.

References

1. Directive 2013/35/EU - electromagnetic fields of 26 June 2013 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (20th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) and repealing Directive 2004/40/EC
2. ICNIRP guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) Health Physics 74 (4):494-522; 1998
3. http://www.wica.intec.ugent.be/exposure-tool/en/
4. EMES Download: http://www.eval.at/

Figures

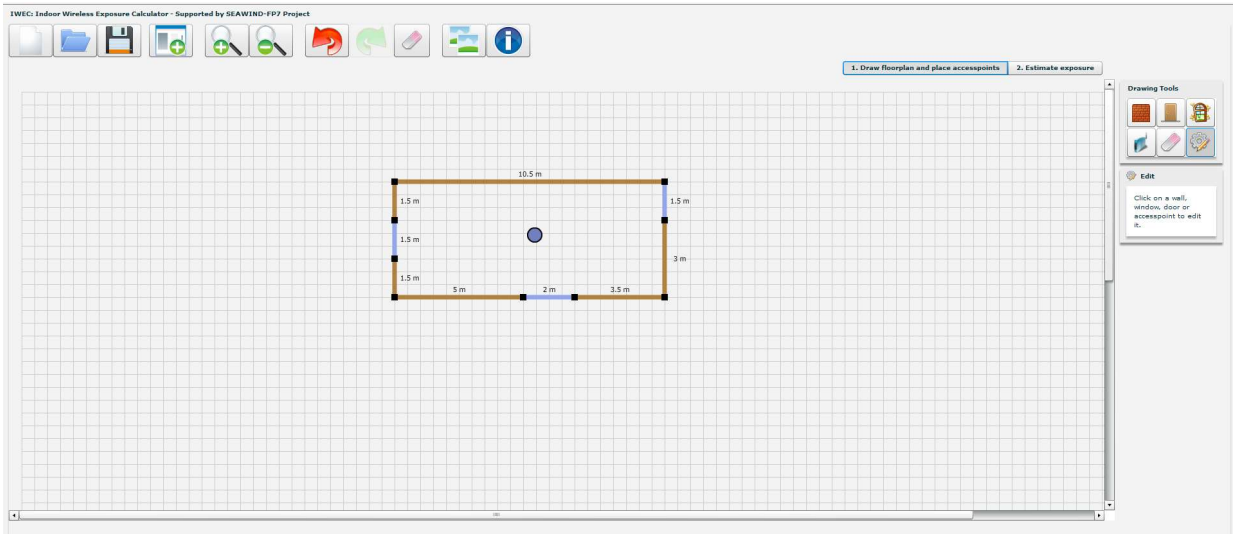
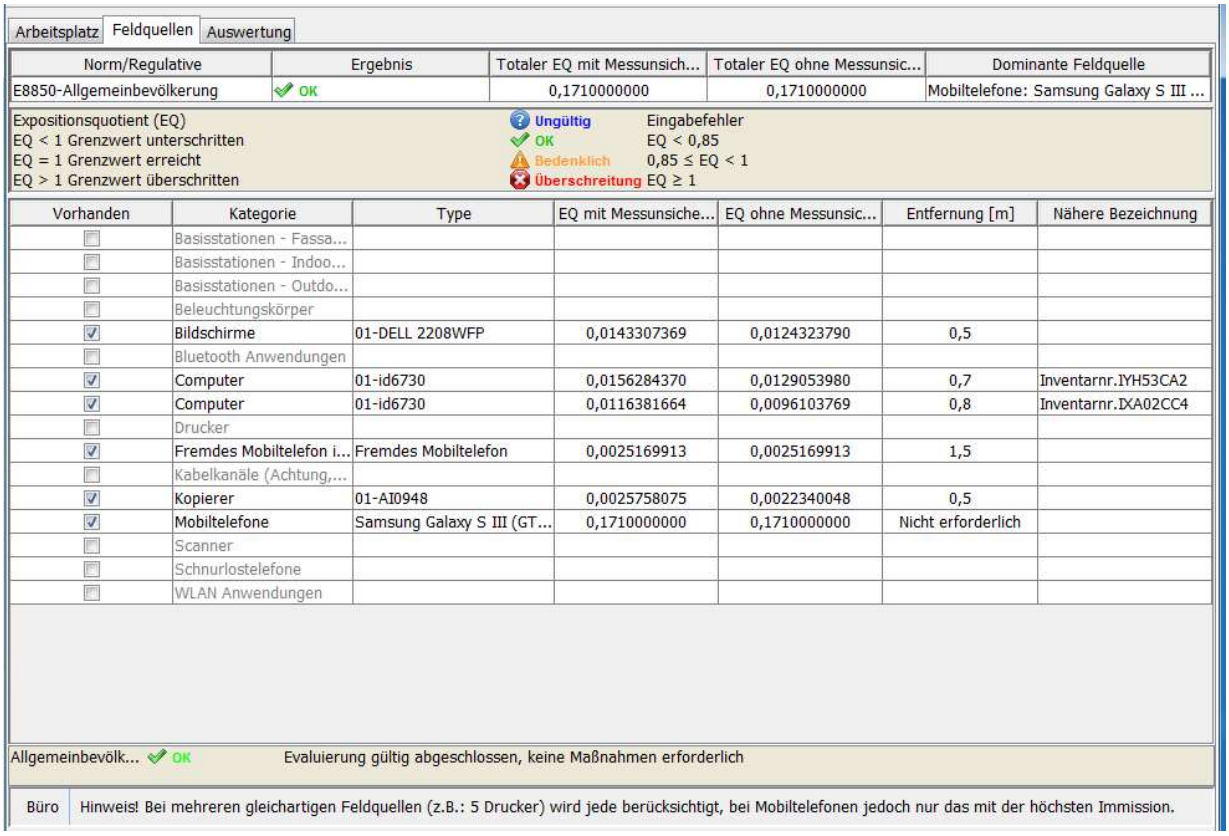


Figure 1. Design of an indoor exposure scenario using the IWEC tool



Arbeitsplatz | Feldquellen | Auswertung

Norm/Regulative	Ergebnis	Totaler EQ mit Messunsich...	Totaler EQ ohne Messunsic...	Dominante Feldquelle
E8850-Allgemeinbevölkerung	OK	0,1710000000	0,1710000000	Mobiltelefone: Samsung Galaxy S III ...

Expositionsquotient (EQ)	Ungültig	Eingabefehler
EQ < 1 Grenzwert unterschritten	OK	EQ < 0,85
EQ = 1 Grenzwert erreicht	Bedenklich	0,85 ≤ EQ < 1
EQ > 1 Grenzwert überschritten	Überschreitung	EQ ≥ 1

Vorhanden	Kategorie	Type	EQ mit Messunsiche...	EQ ohne Messunsic...	Entfernung [m]	Nähere Bezeichnung
☐	Basisstationen - Fassa...					
☐	Basisstationen - Indoo...					
☐	Basisstationen - Outdo...					
☐	Beleuchtungskörper					
☑	Bildschirme	01-DELL 2208WFP	0,0143307369	0,0124323790	0,5	
☐	Bluetooth Anwendungen					
☑	Computer	01-id6730	0,0156284370	0,0129053980	0,7	Inventarnr.IYH53CA2
☑	Computer	01-id6730	0,0116381664	0,0096103769	0,8	Inventarnr.IXA02CC4
☐	Drucker					
☑	Fremdes Mobiltelefon i...	Fremdes Mobiltelefon	0,0025169913	0,0025169913	1,5	
☐	Kabelkanäle (Achtung,...					
☑	Kopierer	01-AI0948	0,0025758075	0,0022340048	0,5	
☑	Mobiltelefone	Samsung Galaxy S III (GT...	0,1710000000	0,1710000000	Nicht erforderlich	
☐	Scanner					
☐	Schnurlostelefone					
☐	WLAN Anwendungen					

Allgemeinbevölk... OK — Evaluierung gültig abgeschlossen, keine Maßnahmen erforderlich

Büro — Hinweis! Bei mehreren gleichartigen Feldquellen (z.B.: 5 Drucker) wird jede berücksichtigt, bei Mobiltelefonen jedoch nur das mit der höchsten Immission.

Figure 2. User Interface of EMES allowing evaluation at work places with multiple sources