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COMPARISON OF MAGNETIC FIELD METERS USED FOR ELF EXPOSURE MEASUREMENT

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Objective

The question of the biological effects of ELF electromagnetic fields (50/60 Hz) has lead to many experimental and epidemiological works, in occupational exposure and in residential exposure.
One of the main difficulties is to integrate the maximum of information about the environmental exposures during the everyday life without limitation to the exposure of the home.
The objective of this study is to analyse experimentally the metrology associated with human exposure to 50Hz magnetic field, in the optic of a study of the French population exposure.

Method

4 meters were tested : the EMDEX II, currently used in epidemiological studies, the EMDEX LITE, which is more recent, the HT300, an Italian meter, and the FD3, which is made by Combinova
A calibration was performed with an Helmoltz coil. The immunity of these meters to GSM signal was also tested. The influence of the sample rate was evaluated.

Results and conclusion

The meter chosen for performing the measurements of the exposure study will be selected in function of the following criteria:

- easiness of use
- precision
- low sample rate
- memory size and reliability of data stocking
- immunity to GSM perturbations