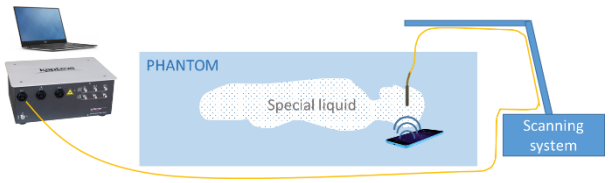
Context

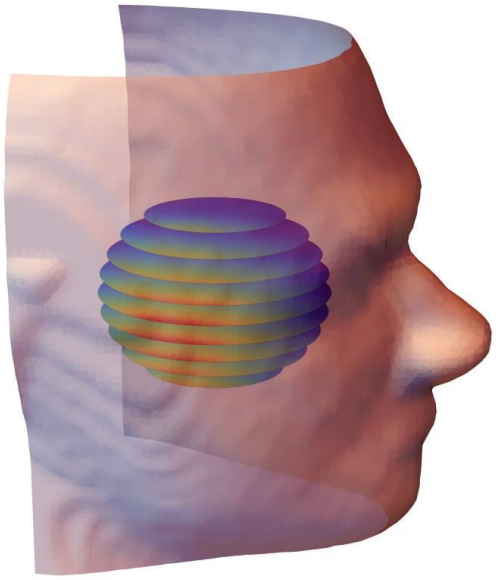
The exposition of people to electromagnetic fields is an historical concern. The electromagnetic fields are issued by a wide variety of systems mainly to transport digital data or energy.

The emitted electrical fields have a very broad frequency range (from kHz to GHz).

The target is to perform measurements in accordance with standards requiring in-situ electric field in a biological medium.



In the market of mobile phone, the expected measurements are expressed in W/kg (the lowest, the better).



Experimental E-field mapping inside a phantom

Existing technical E-field measurement

There are 2 different technologies available on the market today:

- To measure the elevation of temperature inside the phantom in various places
- To measure the electric field based on antenna probes inside the phantom in various places

Proposed solution by Kapteos

The electro-optic solution presents the best possible measurement system thanks to:

- A non-perturbative measurement (no metal part)
- A very compact design (5 mm * 35 mm)
- A very small spatial resolution (< 1 mm)
- An ultra-wide band frequency
- An operating temperature from 0 to +50°C for the probe
- The vector measurement of the E- field with excellent rejection ratio of an axis of the field to another (> 50 dB). The measured information is very comprehensive and accurate.

Targeted markets

Any manufacturers producing systems emitting electrical fields to transport data or energy:

- Research
- Medical
- Mobile phones
- Antennas
- Communication protocols (Wifi, Bluetooth, RFID…)
- Wireless energy charging systems
- Induction furnaces
- Transport of energy

Customer advantages of using Kapteos solution

One system that perfectly meets the standards in place (for frequencies from 100kHz to 40GHz).

It allows the measurement of a field vector (amplitude, phase, spectrum, vector direction).

Kapteos references

- Several publications with the XLIM research institute (France)
- Tübingen Clinic (Germany).
- Infantrymen exposure to electric fields from military communication antennas (France).

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