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**CENTRE OF WAVE MECHANICS APPLIED**  
**CENTRE DE MÉCANIQUE ONDULATOIRE APPLIQUÉE**  
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April 30th, 2007

Expertise report of the multi-frequency phase shifting antennas device  
Patent record # 0508722. Deposited on August 24<sup>th</sup> 2005 at the INPI.  
Worldwide patent WO 2007/023220 A1

Scientific and technological studies have shown that cellular phones present more biological risks than cell phone towers. In fact, portable phones pulsed waves produce a radiation able to increase the temperature of biological tissues within individual users. The SAR or "Specific Absorption Rate" of every wireless phone gives an indication on the quantity of energy transmitted to the human body.

When the electromagnetic waves hit the body, a part of the wave is reflected while the other is absorbed and the penetration orientation changes at every Interface between two elements of the body: skin / muscles, muscles / bones, bones / vessels, etc... Considering the head, after penetrating the skin, the face muscles, the bones, the electromagnetic waves go through more than 2 cm, inside the brain.

Hence, a part of the electromagnetic energy absorbed is converted in heat, provoking an elevation of temperature of the cerebral tissue.

The energy transformation entering into the tissues creates an increase of the molecule's kinetic energy, thus absorbing the electromagnetic waves. This is translated by a molecular excitement with an oscillation of the bipolar molecules of water and phospholipids of the membrane which constitutes the largest part of the living tissue.

Thermographic analysis

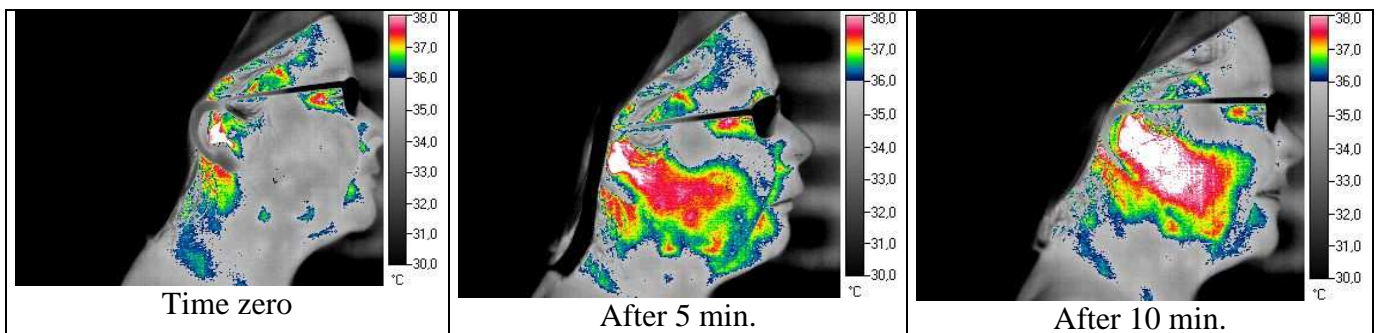
By using thermographic analysis we can demonstrate the heating effect of the electromagnetic fields (E.M.F) of a mobile phone, on the user's face. Compared to the control period, the picture analysis of the subject shows, a significant elevation of the temperature, mainly in the auricular area and especially after 10 minutes of a phone conversation.

## Test of the multi-frequency phase shifting antennas device

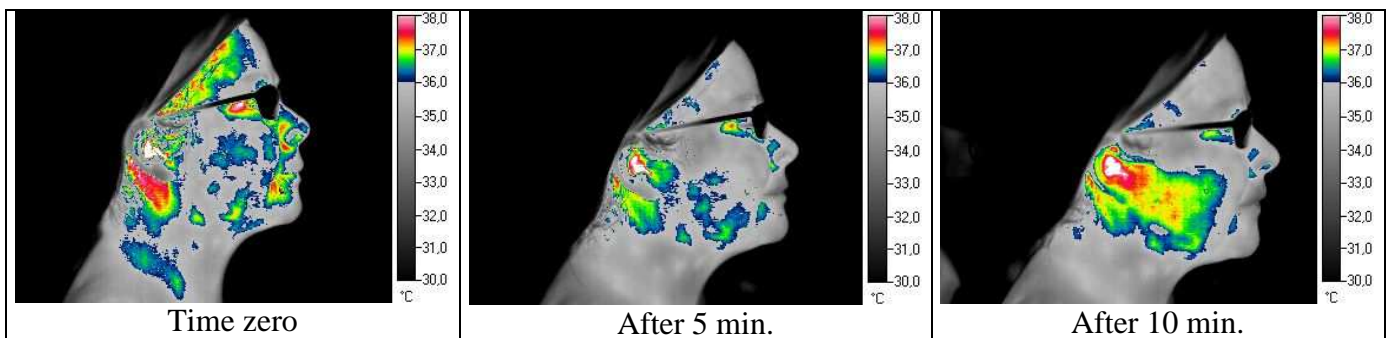
The device contains buckles that are made to generate EMF in opposition and is placed on the back of the cellular phone. When an individual uses a mobile telephone equipped with the 180° phase shifting antennas patch, we can see as early as in the first 5 minutes, a thermal reduction at the level of the exposed face, compared to a non equipped phone. But it's especially after 10 minutes of conversation that we can note a significant decrease of the auricular temperature, in comparison with the thermographic analysis carried out previously. These results must be generalized on a more important number of subjects but show a very clear and effective action of the system.

### Thermal testing over an adult female

Cell phone call **without** phase shifting antennas

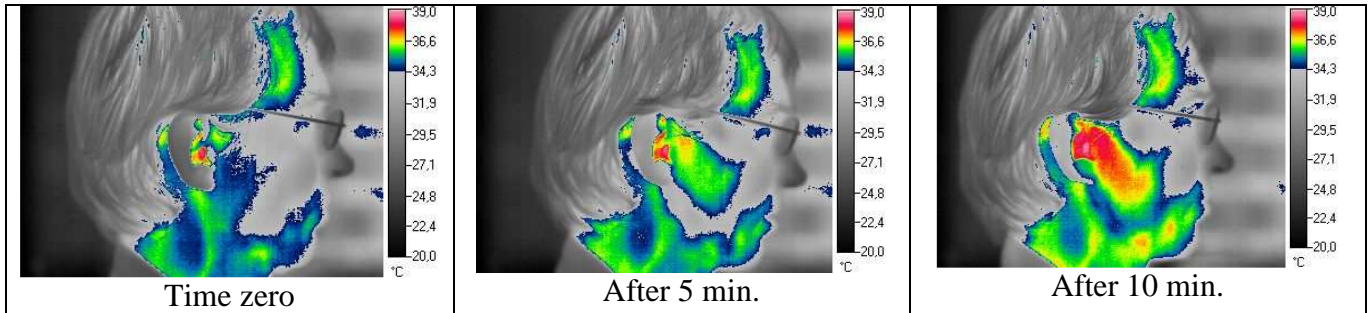


Cell phone call **with** phase shifting antennas

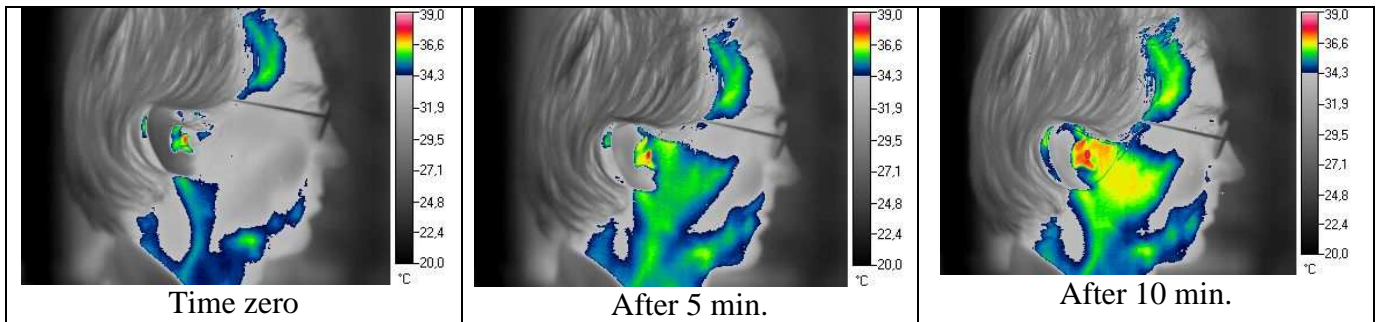


## Thermal testing over an adult male

Cell phone call **without** phase shifting antennas



Cell phone call **with** phase shifting antennas



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