6-2006-37 | Remote Sensing of Biometric Signatures Including Stress Levels and Alertness Through electromagnetic radiation from skin

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Background

The human skin is the largest organ of the body, designed as the primary interface of interaction between us and our environment. The complexity of the multilayered skin morphology provides an extremely broad range of features of sensors, in particular, the sweat ducts, which have helical structures that resemble the structure of Antennas used in wireless communication systems, and emits electromagnetic radiation which depends strongly on physical and mental indications.

Our Innovation

Method for passive detection of electromagnetic waves emanating from the skin in defined frequency ranges.

the technology based on existing methods of microwave reception and transmission, combined with proprietary software, data treatment, and antenna design.

Highlights

- Method allows monitoring the electromagnetic radiation in sub-terahertz frequency range reflected and emitted by skin.
- Biometric signature determined from sweat gland activity which may be used for a diagnosis of a person's physical and emotional health.
- Each individual's skin organ specificity gives rise to unique electromagnetic fingerprint.
- Non-invasive; Specifics of spectral response of skin are highly correlated with level of physical and mental state of activity of subject.
- Multiple-use potentials, for example: Homeland security- identifying suspects about to commit a crime; Medical diagnostics-certain diseases cause unusual activity in sweat glands; Drug control- check for the presence of drugs in the body. Identification- ID individuals through unique patterns of sweat glands in the skin.

Opportunity

- Passive and active measurements in specified frequency range (75-110 GHz) already demonstrated promising results.

Patent Status

Granted US 8,311,616

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