

Impact of Mobile Phone Electromagnetic Waves on Brainwaves

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Abstract

In the era of wireless communication, cellular phone becomes an indispensable accessory to most people. People use cellular phone to interact with others, perform commercial and financial transactions, or conducting recreational activities, etc. The advance in wireless technology and escalate of broadband networks not only flourish communications industry and application service providers but also encourage people perform prolonged wireless network activities under the risk of over exposing themselves in long term high frequency electromagnetic waves. For example, some people conduct excessive phone-trading activities, as it is necessary to the job, and some people exercise the non-stop e-learning or recreation activities on mobile devices with long hours. However, would prolonged exposure to high frequency EMW environment bring adverse effects on human health? This research from the perspective of cognitive neuroscience investigates the effect of EMW from cellular phone to the energy distribution of human brainwave characteristic band by examine brainwave changes of test subjects when exposing to high frequency EMW environment. Experiment uses left ear and right ear to answer the phone separately. The calling session is divided into three stages: the instant of call connection, during the call, and after the call. On each ear, the brainwave signal of each calling stage is extracted and analyzed. The experiment shows at the instant of call connection stage, resulting maximum EMW strength, having extreme effect on the energy distribution of the human brainwave characteristic band, and causing severe changes on the energy of human brainwave.

Keywords: electromagnetic waves (EMW), cognitive neuroscience, brainwave

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