

INCOMING CALL ALERTING METHOD AND MOBILE COMMUNICATION TERMINAL USING THE SAME

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a method for generating incoming call alerting signals depending on motion and a mobile communication terminal using the method, and, more particularly, to a method and a mobile communication terminal using the method, in which the mobile communication terminal is provided with a motion detection unit for detecting the motion of the mobile communication terminal and the volume of a ring tone or the intensity of vibrations is adjusted depending on the detected motion, so that a large volume ring tone or high intensity vibrations are output if a user undergoes a large motion, and a small volume ring tone or low intensity vibrations are output if the user undergoes a small motion, thus allowing a user to take a call or an alarm in a manner suitable for the circumstances of the user.

[0003] 2. Description of the Related Art

[0004] In general, a mobile communication terminal is provided with a function of supporting a ring tone/vibration mode to notify a user of an incoming call and an alarm. That is, the user is notified of the incoming call and the alarm by the above function while holding the mobile communication terminal and carrying out some other work.

[0005] The user of a mobile communication terminal may encounter various circumstances. For example, the circumstances may include a crowded subway, an active workplace, and a quiet conference room. Under these circumstances, the user of a mobile communication terminal must manually adjust the volume of a ring tone or the intensity of vibrations by himself or herself so that the user can perceive the ring tone or vibrations. Accordingly, the volume of the ring tone or the intensity of vibrations must be adjusted to places or circumstances when the places or circumstances are changed, so that the user of the mobile communication terminal must suffer inconvenience.

[0006] In the meantime, there were attempts to provide a method of detecting a noise level depending on circumstances in a mobile communication terminal and adjusting the volume of a ring tone or the intensity of vibrations according to the detected noise level, and a mobile communication terminal in which the method is implemented. However, a function of detecting the motion of a mobile communication terminal or estimating the state in which the mobile communication terminal is placed, and adjusting the volume of a ring tone or the intensity of vibrations based on the detection or estimation results has not been proposed yet.

SUMMARY OF THE INVENTION

[0007] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a method of detecting the motion of a mobile communication terminal using a motion detection unit contained in the mobile communication terminal and adjusting the volume of a ring tone or the intensity of vibrations to be suitable for the detected motion of the mobile communication terminal.

[0008] Another object of the present invention is to provide a mobile communication terminal, which is provided with a motion detection unit for detecting the motion of the mobile communication terminal so that the user of the mobile communication terminal can adjust the volume of a ring tone or the intensity of vibrations to be suitable for the circumstances of the user.

[0009] In order to accomplish the above object, the present invention provides a mobile communication terminal, including a motion detection unit for outputting a value in proportion to the motion of a mobile communication terminal; a memory for storing a program that has an algorithm for adjusting a volume of a ring tone or an intensity of vibrations according to the output value of the motion detection unit, and data that is used to execute the program; and a control unit for performing a function of adjusting the volume of a ring tone or the intensity of vibrations in proportion to a degree of the motion of the mobile communication terminal represented by the output value of the motion detection unit.

[0010] In addition, the present invention provides a method of generating incoming call alerting signals depending on motion, including the first step of checking whether an instruction for a call signal or an alarm activation signal exists; the second step of a control unit reading at least one value in proportion to motion of a mobile communication terminal from a motion detection unit if the instruction exists; and the third step of the control unit adjusting the volume of a ring tone according to the value.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The above and other objects, features and advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0012] **FIG. 1** is a configuration diagram of a mobile communication terminal according to the present invention;

[0013] **FIGS. 2a** and **2b** are flowcharts showing processes of measuring the motion of the mobile communication terminal and automatically adjusting the volume of a ring tone or the intensity of vibration, in accordance with the present invention; and

[0014] **FIG. 3** is a flowchart showing a process of measuring the motion of the mobile communication terminal and automatically switching the mobile communication terminal to a manner mode when a call signal or an alarm activation signal does not exist, in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] Reference now should be made to the drawings, in which the same reference numerals are used throughout the different drawings to designate the same or similar components.

[0016] **FIG. 1** is a configuration diagram of a mobile communication terminal according to the present invention, which includes an input unit **110**, a display unit **120**, a memory **130**, a control unit **140**, a wireless circuit unit **150**, a motion detection unit **160**, an amplifier **170** and a motor drive unit **180**.