# WIRELESS STYLUS

## BACKGROUND

**[0001]** 1. Technical Field

**[0002]** The present invention generally relates to a stylus and, more particularly, to a wireless stylus capable of transmitting a wireless signal.

**[0003]** 2. Description of Related Art

**[0004]** As touch displays have been widely used with various electronic devices, a variety of styluses have been developed accordingly. For example, magnetic styluses have been used with digital tablets and capacitive styluses have been used with capacitive touch displays. The existing wireless stylus provides, for example, adjustments of the thickness and/or the colors of the handwriting traces, electronic erasers, and other different functions, which are achieved by transmitting a wireless signal from the wireless stylus. Therefore, the wireless stylus is provided with a battery installed therein. The operating time of a wireless stylus is limited to the capacity of the battery.

## SUMMARY

**[0005]** The present invention provides a wireless stylus capable of lowering power consumption by adjusting transmission of a wireless signal of the wireless stylus.

**[0006]** One embodiment of the present invention provides a wireless stylus including a stylus tube, a pressure sensor circuit, a signal transmitting circuit and a control circuit. The stylus tube includes a head portion. The pressure sensor circuit, the signal transmitting circuit and the control circuit are disposed in the stylus tube. The pressure sensor circuit outputs a sensed pressure value according to a contact pressure of the head portion. The control circuit is electrically connected to the pressure sensor circuit and the signal transmitting circuit. The control circuit controls the signal transmitting circuit to transmit a wireless signal with a first duty cycle when the sensed pressure value is smaller than a pre-set value, and the control circuit controls the signal transmitting circuit to transmit the wireless signal with a second duty cycle when the sensed pressure value is larger than the pre-set value. The second duty cycle is shorter than the first duty cycle.

**[0007]** Another embodiment of the present invention provides a wireless stylus including a stylus tube, a pressure sensor circuit, a signal transmitting circuit and a control circuit. The stylus tube includes a head portion. The pressure sensor circuit, the signal transmitting circuit and the control circuit are disposed in the stylus tube. The pressure sensor circuit outputs a sensed pressure value according to a contact pressure of the head portion. The control circuit is electrically connected to the pressure sensor circuit and the signal transmitting circuit. The control circuit controls the signal transmitting circuit to transmit a wireless signal at a first transmission power level when the sensed pressure value is smaller than a pre-set value, and the control circuit controls the signal transmitting circuit to transmit the wireless signal at a second transmission power level when the sensed pressure value is larger than the pre-set value. The second transmission power level is lower than the first transmission power level.

**[0008]** To sum up, the present invention provides a wireless stylus capable of adjusting transmission of a wireless signal by a signal transmitting circuit according to whether the wireless stylus is touched or not. Thereby, the wireless stylus ensures that the wireless signal is successfully received while exhibiting lower power consumption and longer standby time.

**[0009]** In order to further understand the techniques, means and effects of the present disclosure, the following detailed descriptions and appended drawings are hereby referred to, such that, and through which, the purposes, features and aspects of the present disclosure can be thoroughly and concretely appreciated; however, the appended drawings are merely provided for reference and illustration, without any intention to be used for limiting the present disclosure.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0010]** The accompanying drawings are included to provide a further understanding of the present disclosure, and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present disclosure and, together with the description, serve to explain the principles of the present disclosure.

**[0011]** FIG. **1** is a schematic diagram of a wireless stylus according to one embodiment of the present invention;

**[0012]** FIG. **2**A is a schematic diagram of a signal transmitting circuit according to one embodiment of the present invention;

**[0013]** FIG. **2**B is a schematic diagram of a signal transmitting circuit according to another embodiment of the present invention;

**[0014]** FIG. **3**A shows a waveform of a wireless signal with a first duty cycle according to one embodiment of the present invention;

**[0015]** FIG. **3**B shows a waveform of a wireless signal with a second duty cycle according to one embodiment of the present invention; and

**[0016]** FIG. **4** is a flowchart of a method for operating a wireless stylus with reduced power consumption according to one embodiment of the present invention.

## DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

**[0017]** The present invention provides a wireless stylus capable of transmitting a wireless signal to a touch display (for example, a capacitive touch display or a magnetic touch display). The wireless signal provides, for example, adjustments of the thickness and/or the colors of the handwriting traces, electronic erasers, and other different functions, to which the present invention is not limited. The types and the functions of the wireless stylus are known to the person with ordinary skill in the art, and descriptions thereof are not presented herein. Above all, the wireless stylus according to the present invention achieves power saving. Therefore, the wireless stylus determines whether it touches a touch display to further determine whether it transmits a wireless signal with reduced power consumption to the touch display.

**[0018]** Substantially, when the wireless stylus does not touch a touch display, it indicates that the wireless stylus is distant from the touch display. Therefore, the wireless stylus transmits a wireless signal in a normal way. On the contrary, when the wireless stylus touches a touch display, it indicates that the wireless stylus is very close to the touch display. Therefore, the wireless stylus transmits the wireless signal with reduced power. In short, the wireless stylus according